A comparison of the practice of rural and urban paramedics: Bridging the gap between education, training and practice

by

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DECLARATION

I declare that this thesis does not contain material which has been accepted for the award of any other degree or diploma in any university; nor does it contain material previously published or written by any other person, except where due reference is made in the text of the thesis.

Peter Mulholland

Dated: 10th May 2010

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Abstract

This thesis compares rural and urban paramedic practice within two states in Australia to establish whether rural paramedics have distinct roles necessitating specifically directed education and training. Other Australian health professions specialize in rural practice, with education and training to suit however there have been few studies comparing the roles of rural paramedics with urban paramedics in Australia. The topic is particularly significant given suggestions of a mismatch between paramedic education, training, and practice. This study contributes to the foundations needed to establish relevant education and training for rural paramedics in Australia by providing a comparison of rural and urban paramedic practice.

A comparative case study strategy was used, and multiple sources of data were collected. These included semi-structured interviews with intensive care paramedics across two states in Australia; an audit of case dispatch data; review of documentation, including job descriptions, ambulance service and union websites, archival information, local media, and universities; and observation of paramedics within their local environment looking at key processes and events. The use of multiple data sources allowed triangulation of data with consequent reduction of research bias.

The major finding of this study was the presence of clear differences between rural and urban paramedic practice. Rural paramedics:

1. practice a community response rather than a case dispatch response,
2. are multidisciplinary team members rather than solely ambulance team members,
3. are educators and managers of volunteers rather than clinical supervisors and,
4. are isolated health workers rather than having access to full resources.

Two main similarities were noted, and these were a strong concern for progress in continuing professional development, and dispatch of similar types of cases in both rural and urban areas.

The comparison of results suggests that there is a need in Australia for paramedic education and training with specific rural components. Rural clinical placements, along with community based and multidisciplinary components could form an integral part of this education and training process. Future directions for continuing professional development require input from paramedics themselves. Further research concerning the three tiers of undergraduate education, postgraduate education, and continuing professional development will ensure education and training for the rural paramedic in Australia avoids the risk of a mismatch between training, education and practice.

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Chapter 1
Introduction

> *"Remote Health is an emerging discipline with distinct sociological, historical and practice characteristics. Its practice in Australia is characterized by geographical, professional, and often, sociological isolation of practitioners; a strong multidisciplinary approach; overlapping and changing roles of team members; a relatively high degree of GP substitution; and practitioners requiring public health, emergency and extended clinical skills"*. (Wakerman 2004: 213)

The definition of remote health by Wakerman (2004) offers an insight to the world of the rural and remote health care professional in Australia. It paints a picture of geographical and professional isolation, of multidisciplinary awareness, and of extended scope of practice. Within this environment, provision of rural and remote health care in Australia is by an array of different health care practitioners. Professionals from medicine, nursing, pharmacy, and allied health are but some of those who are facing the challenges posed by rural health care practice. In rising to meet the challenges such professions are witnessing the development of rural specialties with education and training to suit.

Rural paramedics also offer an integral and essential part of the health care services offered in many rural areas of Australia. However, a problem exists when attempting to consider a distinct rural speciality for rural paramedics.

Paramedics in Australia have a basis in emergency care skills, ranging from basic life support to advanced critical care, and their education and training is well suited to these skills. There is however, little information comparing the practice and roles of rural paramedics with their urban colleagues.

This thesis contributes to the understanding of the roles of rural paramedics in Australia and provides valuable insight to the foundations needed in order to establish relevant education and training for rural paramedics in Australia. The study compares rural paramedic practice with urban paramedic practice and offers relevant discussion on education and training for rural paramedics. This comparison is accomplished by means of a comparative case study, and quantitative analysis of the roles of both rural and urban paramedics.

1.1 Background

In a report to the Australian Learning Council it is recognized that university based paramedic education over the next decade will require collaboration between service providers, professional associations and universities in order to meet changing roles (Willis, Pointon et al. 2009: 9). In highlighting changing roles for rural paramedics O'Meara, Walker et al. (2006) mention the need for a sound framework for education and training based on three tiers of undergraduate, postgraduate, and continuing education necessary to ensure robust and effective practice and continuing professional development (p 60-66). Education and training designed to match the realities of paramedic

roles in rural areas is fundamentally important in order that rural communities receive optimal health care.

The Australian health workforce is in a state of continual development and part of this development aims at meeting the health requirements of rural and remote communities. This involves education and training with specific rural components for health care practice. Professions such as medicine, nursing, and allied health are seeing the emergence of specific rural practitioners within their respective disciplines. Education and training with a rural focus is evident with the establishment of rural clinical schools and specific rural curricula.

Partly driving this focus on rural and remote health needs is evidence that people in rural areas have poorer health outcomes than in urban areas. Rural residents have higher mortality rates especially with road accidents, homicide and suicide. Health behaviors too, such as smoking and alcohol consumption are higher than in urban areas. Indigenous populations have poorer health status with lower birth weights, higher levels of chronic illness, infectious disease, mental illness, injury and suicide (Strong, Trickett et al. 1998: 101-106; Bourke, Sheridan et al. 2004: 182-184; Australian Institute of Health and Welfare 2008: 7-127).

An Australian Productivity Commission research report into the health workforce recognizes these health characteristics and contains several recommendations around education and training for rural and allied medical health staff. These recommendations include:

- Ensuring sufficient funding for education and training places,
- Improving coordination between education and training facilities and health delivery sectors,
- Facilitating a more coherent skills development, and
- Removing regulatory or other barriers that impede efficient and effective clinical training outcomes (Australian Government Productivity Commission 2005: 67).

The Productivity Commission Report also recognizes and supports further investigation into whether the current and planned level of investment in regionally based education and training is sufficient, relative to investment in other policy initiatives (Australian Government Productivity Commission 2005: 111).

Similar sentiments appear in a study examining the support, education and training needs of allied health professionals in rural and remote Australia (SARRAH 2002: V). This Australia wide study recommends health system support for allied health professional services that are responsive to community needs. In addition, it recommends policies that ensure rural and

remote health professionals have access to support and professional development within their own disciplines.

Paramedic services too, demonstrate a developing worldwide focus on attention to community based health needs. Literature from the National Health Service (NHS) in the UK demonstrates that health services staff are reforming and extending their roles (Department of Health 2000; Department of Health 2001). In the year 2000, the NHS expected the future roles of paramedics to involve non emergency based practice that would be used within the community (Joint Royal Colleges Ambulance Liaison Committee 2000). Similarly, the United States National Highway Traffic Safety Administrator's *Agenda for the future* envisaged that paramedics would become more integrated with the overall health system by undertaking a community based health management role (National Highway Traffic Safety Administrator 2000). Since posing these visions for the future there has been development of various community based paramedic programs, particularly in the United Kingdom (Mason, Wardrope et al. 2003; Cooper, Barrett et al. 2004; Doy and Turner 2004; Cooper 2005; Mason, Coleman et al. 2006; Woollard 2006; Mason, O'Keefe et al. 2007).

In Australia, there is general support for changes in paramedic practice, education and training. Australian paramedic education has evolved from the "in house" courses conducted by employer groups through to the TAFE

(Technical and Further Education) system, and, since 1994 has seen the introduction of Bachelor of Health Science (Paramedic) and various Masters qualifications through several universities (Lord 2003; Australian College of Ambulance Professionals 2005: 2-5). The need for national standards for paramedic education and the concurrent call to establish a national co-ordination group gained recognition at an ambulance education symposium held in 1995. By the time of the second symposium in 2004, the Education Committee of the (then) Convention of Ambulance Authorities had formed; it called for a uniform approach to national paramedic education, and began planning to implement this (Grantham 2004). The (now) re-named Council of Ambulance Authorities, whose members consist of senior representatives from each of the ambulance services in Australia, is presently active in the development of national education standards and establishing means by which to accredit education providers (Patrick 2007; Council of Ambulance Authorities 2008: 5).

In line with rural health care developments, there are new initiatives for rural paramedic roles within rural Australia, and some Australian ambulance organizations are recognizing a need for further expansion of the paramedic services offered in rural communities. The New South Wales (NSW) Ambulance Rural Plan (2006) states the need for health related research and development, with identification of geographical packages for rural areas (Ambulance Service of New South Wales 2006: 8). A report from 2008 into

the management and operations of the NSW ambulance service recognizes the importance of intensive care paramedic training in rural areas (NSW Ambulance Service 2008: 105-107). The NSW Ambulance Service has also been instrumental in establishing community based extended care paramedic programs in both urban and rural areas (Ambulance Service of New South Wales 2008: 55-57). From Queensland was a comprehensive worldwide examination of several models of extended paramedic health care, which informed the development of a postgraduate Certificate in Remote Paramedic Practice through James Cook University (Raven, Tippett et al. 2006; Raven, Tippet et al. 2007).

Recent research specifically examining the roles of rural paramedics in Australia has revealed an extension beyond emergency care alone, and highlights community based practice. From one report, commissioned by the Council of Ambulance Authorities, comes a proposal for a new model for a rural expanded scope of practice that includes rural paramedic roles of community engagement, emergency care, scope of practice extension, and primary health care (O'Meara, Walker et al. 2006). In an extension of this report the importance of multidisciplinary practice among rural paramedics is also mentioned (Mulholland, O'Meara et al. 2009). The future for rural paramedics in Australia will recognize this expansion from an emergency care focus and provide education and training with specific rural components.

1.2 The Problem

In order to inform a rural education and training program for paramedics there must be confidence that the roles of rural paramedics differ from those of urban paramedics. Assumptions regarding the nature of rural paramedic roles, and what is required for their education and training, should be avoided. Instead, differences between rural and urban practices should be explored as a vital step in informing the revision of paramedic education and training.

There have been no direct comparisons between the roles and practices of Australian rural and urban paramedics. The study by O'Meara, Walker et al. (2006) for example presents an excellent picture of rural paramedics but was developed with information from rural areas. The curriculum for the Graduate Certificate in Remote and Rural Paramedic Practice through James Cook University was developed mainly by using information from rural and remote nursing (Raven, Tippett et al. 2006; Raven, Tippet et al. 2007). There is no firm evidence that the roles of rural paramedics are indeed any different to those of urban paramedics.

Although there is no comparison of rural paramedic roles and urban paramedic roles in Australia there has been research into models of paramedic practice specific to rural paramedics. These descriptive models of rural paramedic practice provide a way of categorizing the roles of rural

paramedics in Australia. However, in order to compare rural paramedic practice with urban paramedic practice there also must be confidence that rural models of paramedic practice are also comparable with each other.

In other health care disciplines rural specialties are appearing, with education and training to suit. There appears to be some agreement that Australian rural medical practice is developing as a distinct speciality and rural clinical schools now appear in Australia. Nursing is also developing distinct rural specialties, with many nurses in rural communities informally performing duties that are an extension of their initial training (Hegney 1996: 3-4; Roberts 1996: 171; Stark, Nair et al. 1999: 276; Offredy 2000: 280; Wynne, Lodder et al. 2002: 94; Usher and Lindsay 2003: 84; Bagg 2004: 4). This has led to legislation and introduction of educational courses in order to formalize the activities of rural nurses (Sullivan, Dachelet et al. 1978: 973; Roberts 1996: 174; McCann and Baker 2002: 176; Plager, Conger et al. 2003: 407; Usher and Lindsay 2003: 84; Bagg 2004: 4). The need for education and training specific to rural paramedics will rely on rural paramedic practice being different to urban paramedic practice. The identification of a specialization in rural paramedic practice in alignment with other health specialties, will demonstrate a need for education and training specific to rural paramedics.

Specialized education and training for rural paramedics will require accurate information on the specific nature of rural paramedic practice. The uncertainty concerning whether rural paramedic practice is different to urban paramedic practice is compounded by evidence of a mismatch between paramedic practice, education and training. In one comment by a university academic to the Australian Learning Council, and concerning paramedic education;

> *"most of the curriculum we have is based on past experiences and histories of people developing it rather than what the job is out there now"* (Willis, Pointon et al. 2009: 39)

Further to this there are suggestions in several United Kingdom (UK) studies of a mismatch between paramedic curriculum and practice (Lendrum, Wilson et al. 2000; Kilner 2004a; Cooper 2005). Inadequate design of education and training has resulted in failure of some paramedic programs. In the United States one of the initial extended scope of practice programs for rural paramedics failed partly due to poor continuing education (Hauswald, Raynovich et al. 2005). Practice should define education and training, rather than poorly informed education and training defining what is, or is not part of practice.

Overall, there is a gap in the determination of whether rural paramedic practice is any different to urban paramedic practice, and if it is different from, how. This gap becomes highly significant in combination with suggestions of mismatch between paramedic education, training, and practice.

1.3 Purpose

The purpose of this research was to compare rural paramedic practice with urban paramedic practice in order to establish whether rural paramedics are practicing distinct roles necessitating specifically directed education and training. This comparison of practice has facilitated discussion on education and training specific to rural paramedics. The three tiers of undergraduate education, postgraduate education, and continuing professional development have formed the basis for a discussion of education requirements.

1.4 Research Questions

Given the purpose of this research, two questions were asked:

1. How does the practice of rural paramedics compare with that of urban paramedics?
2. How does the practice of rural paramedics compare across different local approaches?

1.5 Methodology

Use of a qualitative approach in the form of comparative case studies formed the basis of this research. Three cases were used in this study; they were from two Australian states, Tasmania and Victoria. The cases represented two rural and one urban model of paramedic practice. The urban case represented an example of traditional practice where intensive care paramedics worked with other ambulance professionals. Of the two rural cases, one represented the 'Sufficing' model where intensive care paramedics worked alongside volunteers and the other represented the 'RESP' model, which saw innovative paramedic practice in local communities. Units of analysis within each case consisted of various paramedic locations.

The sources of data comprised:

- Interviews with paramedics,
- Audit of cases dispatched
- Review of documentation, including job descriptions, ambulance service and union websites, archival information, local media, paramedic curricula of universities, and
- Observation of paramedics within their local environment.

The case study design followed the format as suggested by Yin (2003) and cases were constructed with units for analysis, in this case paramedic localities, which were then compared and contrasted within and across cases.

For example, one particular rural case consisted of two units for analysis, which were independent rural localities. Analysis of each locality considered multiple sources of data, and formation of a robust case took place by comparing each unit of analysis for similarities or contrasts in data. Purposeful selection of units of analysis was an integral part of the format, however there was no control over the events examined.

The observation of data from more than one point, and the use of multiple cases, meant that data could be triangulated. This process of triangulation increased rigor of the research by providing complimentary perspectives, building a full and complex picture of the work of both rural and urban paramedics (Yin 2003: 97-99; Hansen 2006: 54-56).

Inductive analysis of data occurred with the aid of NVivo8™ (QSR International Pty Ltd. 2008) statistical software package, which aided comparison across each rural and urban case and the identification of consistent themes. Quantitative data analysis occurred with the aid of SPSS™ 14.0 (SPSS Inc. 2005) statistical software for Windows. Ethics approval was obtained through the University of Tasmania Human Research Ethics Committee (Tasmania) Network (Appendix A) and Metropolitan Ambulance Service, Victoria (Appendix B) with assurance of confidentiality for all participants.

1.6 Importance of study

Comparison in work practices for rural paramedics and urban paramedics is sparse. While there has been some exploration of differences between rural paramedic practice and urban paramedic practice this has tended toward specific skills such as the ability to practice intubation (Brown, Copeland et al. 1996; Burton, Baumann et al. 2003; Jemmett, Kendal et al. 2003), inexperience with paediatrics (Stevens and Alexander 2005), or even higher ambulance crash rates amongst rural paramedics (Weiss, Ellis et al. 2001; Ray and Kupas 2007). With moves toward suggesting models specific for rural paramedic practice, and proposals of rural paramedic postgraduate courses, accurately informing paramedic education and training is essential. It is important to have the practice of rural paramedics define their education and training, and not education and training define practice.

1.7 Scope and limitations of study

This research was a comparison of the practice of rural and urban paramedics. The purpose was to determine whether rural paramedics are practicing distinct roles needing specifically directed education and training. As such, the scope of study extended to an examination of the practice of both rural and urban paramedics, their thoughts on education and training, and current education and training practices within employing organisations.

A literature review examining paramedic related literature concerning practice of both rural and urban paramedics, as well as their education and training both internationally and in Australia comprised the first phase of this study. The scope of this examination extended to other health care disciplines practicing in rural areas in order to place paramedic practice in perspective with these other disciplines.

Interviews with paramedics formed a large part of this project. In order to maintain consistency, interviews were with those paramedics at the qualification level of intensive care paramedic. Interview questions aimed to elicit what type of work the paramedics performed, any interactions with community members and other health professionals, and thoughts on their own education and training.

The use of a case study strategy allowed for the inclusion of data other than field interviews. The multiple sources of data used comprised:

- semi-structured interviews with intensive care paramedics across two states in Australia,
- audit of case dispatch data
- review of documentation, including job descriptions, ambulance service and union websites, archival information, local media, university curricula, and

- observation of paramedics within their local environment, key processes and events.

Triangulation of these multiple data sources increased the rigor of research results and created a rich illustration of the practice of both rural and urban paramedics.

The main limitation of this research project is that generalization applies to the areas examined, and generalization is based on theory and concepts. It was beyond the scope of this study to offer a comparison of all rural and urban paramedics in Australia and a degree of purposeful selection was required. Data were specific to the states of Victoria and Tasmania, and to the cases used.

Further to purposeful selection, this study made use of the seven point Rural, Remote and Metropolitan Area classification (RRMA) for rural cases, and all units of analysis selected for each rural area were limited to the R3 RRMA classification (Australian Institute of Health and Welfare 2004).

The restriction of interview subjects to intensive care paramedics was also a limitation of this research. Future investigations may gather a broader perspective by including other levels of paramedic qualification, including students, non intensive care paramedics, ambulance managers, and

ambulance educators, as well as community members, patients, or other health care practitioners.

The process of triangulation used in this study was also limited by the size and resources available to the study. Several methods of triangulation are available for use in research, and these include; data triangulation with multiple data sources, investigator triangulation with the use of different investigators, methodological triangulation where multiple methods are used, and theoretical triangulation where opposing hypotheses or theoretical frameworks are tested (Thurmond 2001: 256-257; Flick 2004: 178-181). This project was limited to triangulation of data over a set period of between the years 2004 to 2008.

1.8 Summary

There is recognition that Australian paramedic education and training over the next decade will require development in order to meet changing roles of paramedics. In rural areas, the unique needs of rural communities are driving health services in Australia to adapt to meet these needs. Professions such as medicine, nursing, and allied health are recognizing that rural health requirements demand specific rural health specialties. Part of the changing roles for paramedics may also involve a specific rural health speciality.

The presence of models of rural paramedic practice, and the establishment of postgraduate rural education for paramedics, provides some evidence that paramedics practicing within rural Australia are exhibiting certain initiatives, which see an extension of roles beyond that of emergency care alone. Along with these extended roles comes a call for appropriate education and training to the three levels of undergraduate, postgraduate, and continuing professional development.

In order to inform a rural education and training program for paramedics there is a need to avoid assumptions regarding the nature of paramedic practice. With a gap in the literature offering comparison of rural paramedic practice and urban paramedic practice, the first step in this information process is an investigation of the differences and similarities between rural and urban paramedic practice. Different models of rural paramedic practice also demand comparison, and with the evidence gathered, the need for specific education and training for rural paramedics will become apparent.

This research has addressed a gap in the literature comparing rural paramedic practice with urban paramedic practice. The study has aimed to fill the gap by providing evidence that rural paramedics operate with distinct roles, requiring specific education and training with rural components. By attending to the three tiers of undergraduate education, postgraduate education, and continuing professional development, the future for rural paramedics in

Australia can be founded on a solid information base and thus avoid the potential situation where education and training does not match what is practiced.

In Chapter Two, I present a review of literature relevant to the aim of this thesis. This is followed in Chapter Three by an explanation of methodology used, and an outline of the Case Studies in Chapter Four. In Chapter Five I detail the findings of my comparison of urban and rural paramedic practice in Australia in accordance with themes that describe major similarities and differences between rural and urban paramedic practice. In Chapter Six the findings are discussed in relation to their potential significance for education and training for Australian rural paramedics. Chapter Seven discusses how the research aim was met and discusses further directions for paramedic education, training, and practice in rural Australia.

Chapter 2
Literature Review

2.1 Introduction

I demonstrated in the previous chapter that the Australian health workforce recognizes the need to adopt education and training designed to meet the needs of rural communities. In this chapter, I assess approaches to paramedic practice in the academic and policy literature. In particular, I bring to the foreground evidence regarding the differences in rural and urban paramedic practice and the capacity of paramedic education to cater for any requirements of rural paramedic practice in Australia.

This chapter begins with an explanation of the terms and concepts used in this thesis, and is followed by a discussion on the models of rural paramedic practice that currently appear in the literature. There is little knowledge of the differences between the roles of rural paramedics and urban paramedics. In contrast, evidence from other health care professions illustrates how they are dealing with the challenges of rural health care delivery, and how design of education and training helps meet these challenges.

In light of how other health care disciplines meet the education and training challenges posed by rural health care delivery, I then examine current

education and training for rural paramedics. An examination of the literature considers the levels of undergraduate, postgraduate, and continuing education. Examples of education and training to suit a paramedic speciality such as rural practice are present, however based on international literature there is a notable recurring theme of education, training, and practice mismatch.

2.2 Terms and concepts

A primary issue in paramedic literature is the use of differing terminology when describing paramedic services. Terms such as ‘paramedic’, ‘paramedic practitioner’, ‘extended scope paramedic’, ‘ambulance officer’, ‘emergency medical technician’, and ‘pre-hospital’ are noted. Differences occur when considering literature from different countries and each practitioner may have different skill sets and levels of training and practice. Some articles also include ‘volunteer ambulance personnel’.

In the context of this thesis, the term ‘paramedic’ means a professional ambulance employee trained to the level of advanced life support or intensive care. This includes advanced drug therapy and airway maintenance.

The definition of the term ‘paramedic practice’, for the purpose of this literature review is the actual work of paramedics. This is not restricted to

patient care, and includes activities such as community support, and education of volunteers, allied health professionals, and community members.

In some cases, discussion of an extension of paramedic care beyond the traditional emergency response uses varied terminology. This ranges from ‘paramedic practitioner’, ‘expanded scope paramedic’, community paramedic’, and ‘emergency care paramedic’. Use of each term in this literature review is within the context of the literature in which it appears. Use of the terminology ‘expanded scope paramedic’ (ESP) in this thesis refers to any paramedic formally practicing skills additional to emergency response.

When practitioners of varied disciplines work together, many terms appear in literature. These include ‘multidisciplinary’, ‘inter-disciplinary’, inter-professional’, or ‘multi-professional’. For the purpose of this study, the terminology ‘inter-professional’ is used, and is taken to mean when professionals actively collaborate with each other with the main aim of improving the quality of patient care (Freeth, Hammick et al. 2002: 351).

There is generally no definition of the terms ‘education and training’ in most articles examined. Cooper (2005) offers a definition of ‘training’, as a fixed process having a clearly defined beginning and end, with ‘education’ a more holistic, continuous development (Cooper 2005: 379). I adopt these definitions for the purpose of this thesis.

The term ‘curriculum’ is related to education and training, and although used, none of the literature examined produced a definition of its meaning. This is quite possibly because, as Marsh (1997) suggested, ‘curriculum’ itself has been the source of much debate. ‘Curriculum’ may be defined in terms of content, product, a set of performance objectives, what is learnt as an experience of schooling, or everything that is planned by a school (Marsh 1997: 3-5). In this literature review the term ‘curriculum’ appears as a combination of theoretical knowledge, and practical experiences as set out by relevant educational institutions, and service providers.

Terminology regarding rural and remote practice is also considered. The concept of “rural” in one American study into Emergency Medical Technician (EMT) training was taken to mean a population of fewer than 2,500 people (Dawson, Brown et al. 2003). Compare this with the mention in one United Kingdom study where a rural area was described as having a population of about half a million, with the urban one having two million (Cooper, Barrett et al. 2004: 616). In Canada, the official definition of ‘rural’ comes from Statistics Canada, which refers to people living outside of commuting zones of large urban centers. Some non official definitions also apply, even to the extent of classifying most northern communities, or small towns as rural (Pong 2000).

At the time of conducting research for this thesis, literature examined in Australia used the Accessibility / Remoteness Index for Australia (ARIA) and the seven point Rural, Remote and Metropolitan Area classification (RRMA). The ARIA definition categorizes communities from those which are highly accessible and have relatively unrestricted accessibility to a wide range of goods and services and social interactions, to very remote, with very little availability of goods, services, and social interactions (Department of Health and Aged Care 1999). RRMA is population oriented and the largest non metropolitan population (RRMA 3) classified by RRMA is between 25,000 – 99,999 people (Department of Primary Industries and Department of Human Services and Health 1994). The ARIA definition is useful in that it categorizes what is rural and what is remote[1]. For the purposes of this literature review, 'rural and remote' are considered in terms of being removed from the greater extent of services offered at major metropolitan and urban centers.

[1]At the time of writing this thesis a new Australian classification system had been introduced on 1st July 2009. The Remoteness Area Classification (RA) classifies census collection districts (CDs) which share common characteristics of remoteness into broad geographical regions (Australian Government Department of Health and Ageing 2009)

2.3 Search terms

Search terms “paramedic”, “paramedic practitioner”, “extended scope paramedic”, “ambulance officer”, “emergency medical technician” (EMT), “pre-hospital”, “ambulance undergraduate and postgraduate”, “training”, “education”, “continuing education”, “rural’, “remote”, “urban”, “pre-hospital”, “multi/inter-disciplinary”, and “inter-professional” were used. As this research compared rural and urban paramedic practices in order to inform education and training of rural paramedics, search terms were used in combination with the Boolean operators ‘AND’ as well as ‘OR’. For example “paramedic AND education”.

Journals with titles related to the research aim were the target of investigation. Examination of education and training literature in health related services included the health education journals *Medical Education, Clinical Teacher, the Journal of Continuing Education in Health Professions, Advances in Health Sciences Education*. *The Australian Journal of Rural Health* and the online journal *Rural Remote Health* were used because of peer reviewed articles on Australian and international rural health and medical practice. The online *Journal of Emergency Primary Health Care* is the only Australian based peer reviewed journal relating to paramedic practice and provided information relevant to this topic. Library catalogues at the University of Tasmania, and the Tasmanian Ambulance Service Library in

Hobart, were utilized, as were the online search engines Medline via PubMed, Meditext, and ProQuest. Google Scholar was a further online resource used.

Sorting of articles was by relevancy of title and/or abstract to the subject being investigated. In order to maintain currency articles selected for review were limited to a ten-year period prior to investigation. Where little information was available, or where articles were appropriate to provide an historical perspective this period was extended.

2.4 Models of rural paramedic practice

The purpose of this section is to present models of rural paramedic practice. The section describes identified models of rural paramedic practice in Australia and supports descriptions with use of international examples. A chronological approach reveals the most current thoughts relating to models of rural paramedic practice.

Paramedic related literature reveals the presence of several models of rural paramedic practice, with these models representing alternative ways of describing the roles of rural paramedics. Many of these descriptions of paramedic practice originate from the body of research from one Australian academic. O'Meara (2002) uses labels such as 'Competitive', 'Expert', 'Sufficing', and 'Community Volunteer' to describe traditional models of rural paramedic practice. Other models are also described, with

implementation of the ‘Practitioner’ and ‘Multi Option Decision Point’ (MODP) models in several countries (Shoup 1995; Neely, Drake et al. 1997; O'Meara 2002; Gregory 2006; Raven, Tippett et al. 2006; Woollard 2006). Most recently, a model of rural paramedic practice has appeared in the literature in which rural paramedics display roles including Rural community engagement, Emergency care, Scope of practice extension, and Primary health care (RESP) (O'Meara, Walker et al. 2006). In an extension of this ‘RESP’ model of practice Blacker, Pearson et al (2009) describe three other models, namely the ‘Primary Health Care’ model, ‘Substitution’ model, and ‘Community Coordinator’ model.

Although those models of paramedic practice described as ‘Competitive’, ‘Expert’, ‘Sufficing’, and ‘MODP’ are transferable across rural and urban environments, the ‘Community Volunteer’ model, the development of the ‘RESP’ model of rural practice, and three subsequent models suggest rural paramedics in Australia operate in distinctive roles. Each model of rural paramedic practice however describes different local approaches; there is a gap in the literature comparing rural models of paramedic practice with each other. The models will now be discussed.

2.4.1 ‘Competitive’ Model

The ‘Competitive’ model has a capitalistic, market driven base, with financial incentives and penalties linked to performance. Government run services such

as dispatch or fleet maintenance may be influenced in this way, and privately run services are encompassed within a 'Competitive' model (O'Meara 2002: 269). O'Meara (2002) suggests that because the 'Competitive' model depends on the market, one problem in rural areas is the sparse population base and the potential risk to funding that this creates. One other problem is that the values of a profit driven service may be at odds with the values of volunteerism found in many rural communities (pp. 273,275).

2.4.2 'Expert' Model

The 'Expert' model has as a basis, pre-hospital care with professional staff, using advanced technology, advanced skills and latest equipment. It aims to incorporate clinical evidence in order to provide efficient and effective treatment of illness and injury (O'Meara 2002: 278). An extreme example of the 'Expert' model in the rural context is the use of aero-medical services. Used as an emergency response a helicopter service may not necessarily offer a faster response than road ambulances (Nicholl, Beeby et al. 1994: 145; Kurola, Wangel et al. 2002: 781-783). However, it does offer highly trained paramedics and sometimes medical practitioners to a community, and has been used with success to deliver up to date medical services such as thrombolytic therapy, where previously none was available (Silliman, Quinn et al. 2003). In the context of the 'Expert' model, literature regarding aero-medical services also features cost comparisons with road ambulance

transport, illustrating the expense in maintaining this level of care (Nicholl, Beeby et al. 1994: 145; Kurola, Wangel et al. 2002: 781-783).

2.4.3 'Sufficing' model

The 'Sufficing' model is based on services that provide a minimum acceptable level of care as a safety measure, and has the premise that all people are entitled to basic services irrespective of socio-economic status, demographic profile, or place of residence. O'Meara (2002) suggests that the 'Sufficing' model closely resembles traditional ambulance operations within Australia. In a 'Sufficing' model there is negotiation and management of conflict between competing interests and O'Meara (2002) gives the example of the Victorian Ambulance Service, utilizing political processes, media, and union action to introduce an Advance Life Support program for full time rural paramedics (p. 278). Although a minimum acceptable level of care for all community members is a basis for the 'Sufficing' model, there are some inconsistencies in this provision of universal standard of care. In Victoria, staffing of some rural locations is 24 hours by full time staff, and in others with a combination of volunteers and paramedics (p. 282).

2.4.4 'Community/Volunteer' model

The 'Community/Volunteer' model is based on services that are representative of a community controlled and operated ambulance service and aim to meet the pre-hospital expectations of a local community, sometimes

with the support of a paramedic. With volunteer services a mainstay of many rural communities, O'Meara (2003a) proposes a 'Community/Volunteer' model as having a place within rural Australia. A knowledgeable and empowered community, a dispatch system with local knowledge, adequate physical resources to meet community expectations, a volunteer staffing base, and direct communication with and subservience to local health professionals are key elements of this model (O'Meara 2003a).

Ensuring an adequate supply of trained and motivated volunteers is one of the challenges for the 'Community/Volunteer' model, especially amongst competing emergency services or volunteer organizations within a rural area. Maintaining competence in volunteer staff, particularly in communities without links to a local General Practitioner can be supported by employing fully qualified advanced skilled paramedic staff to take leadership and training roles (O'Meara 2003a). This is important, considering that Fahey, Walker et al. (2003) note that volunteer ambulance officers call for more formal training and also call for national training standards. O'Meara et al. (2004) when researching health services in small rural communities of Victoria, found that volunteers experienced low case load, and had limited opportunity for training to develop satisfactory clinical judgment. Rural Ambulance Victoria proposed that paramedics, not only train volunteers, but also take a larger role in the community, through public health promotion and education (O'Meara, Kendall et al. 2004).

2.4.5 'Multiple Option Decision Point' (MODP) model

The 'Multiple Option Decision Point' (MODP) model proposed by Neely, Drake et al. (1997), as the name suggests, is based on multiple patient care alternatives. At the time of writing their report, the only option of treatment or transport across all stages in the paramedic response continuum was the dispatch of paramedics, resulting in transport of virtually all patients to a hospital emergency department. The 'MODP' model proposes that call takers decide whether the patient requires paramedic response or another non-emergency resource.

Further, paramedics at the scene could transport to hospital, instruct patients on other available means of transport, or arrange other suitable medical resources. Working under a set of proposed guidelines it is suggested by the authors that the model would see ambulances doing less transport, as other appropriate pathways for patient care are arranged (Neely, Drake et al. 1997: 797-799).

A version of the 'MODP' model appears in a proposal from one UK study, where senior staff from the Ambulance Trusts recommended a tiered response with selection and dispatch of paramedics and technicians to different categories of call. They also suggested an increased skills base for paramedics, and use of trained first responders from other agencies. This

differed from the existing one tier system in operation at the time (Hassan and Barnett 2002: 157-158) .

2.4.6 'Practitioner' model

This model is based on services with high levels of community participation and is a combination of the 'Sufficing' model in which the paramedic at times works with ambulance volunteers, and the 'Community/Volunteer' model where the paramedic may train ambulance volunteers. O'Meara (2002) suggests the 'Practitioner' model also incorporates the 'Expert' model and sees paramedics demonstrating an increased depth of treatment and clinical decision making within an extended scope of practice (p. 308). This increased depth of treatment and decision making is an advancement on the 'MODP' model proposed by Neely, Drake et al. (1997).

The 'Practitioner' model proposed for rural areas, where there is an opportunity for paramedics to perform a broader community and public health role, finds international support. One of the earliest examples for extended scope of practice rural paramedics is the Red River Project of New Mexico (Shoup 1995). Here paramedics were cross-trained as community health specialists, allowing for treatment on site then discharge from care, to avoid long and unnecessary transports to rural hospitals. The University of New Mexico's Emergency Medical Service (EMS) Academy developed the curriculum, and integrated expertise from differing fields, including

physicians, residents, physician assistants, midwives, and nurses. Training was divided into two phases, with 200 hours of education during the first phase, and new skills such as relocation of extremities, catheter placement, and basic counselling taught during the second phase (p. 46).

In Canada, community interaction by paramedics sees activities such as general health checks and other non-urgent services such as administration of flu shots to members of two remote island communities. Paramedics are also involved in more complex activities such as wound care, falls prevention, and a medication compliance scheme (Raven, Tippett et al. 2006: 26-27).

In the United Kingdom, there are several examples of the paramedic 'Practitioner' model emerging from a need to reduce the burden on hospital emergency departments, and provide greater community based care in both urban and rural areas. Mason, Wardrope et al. (2003) note recognition by the NHS of the need to train paramedics in community based skills and the introduction of skills such as assessment and treatment of minor injury (pp. 196-197). Similar practitioner programs are based in South Yorkshire, Coventry and Warwickshire (Gregory 2006). In East Anglia a community based practitioner scheme incorporates paramedics working from general practitioner surgeries and supporting primary health care teams .(Bilby 2004) A study of UK paramedic practitioner programs reveals that practitioners

operate or plan to operate in walk in clinics, emergency departments, minor injury units, and primary care (Mason, Coleman et al. 2006: 436).

2.4.7 'RESP' model

Although the 'Competitive', 'Expert', 'Sufficing', 'Practitioner', and 'MODP' models have application in rural environments, there is relevance across both rural and urban paramedic practice. The 'Expert' model for example can see utilization of urban aero-medical paramedics in a rural environment; the 'Practitioner' model sees paramedics working in urban medical clinics and emergency departments as well as rural locations.

In order to specifically elaborate on rural models of paramedic practice one major study set in rural south Eastern Australia was undertaken with support and funding from the Council of Ambulance Authorities Inc (CAA), various state services, and three universities (O'Meara, Walker et al. 2006). Targeting innovative paramedic programs and using four different case studies from New South Wales, Victoria, South Australia, and Tasmania, a series of interviews with stakeholders including paramedics, general practitioners (GPs), nursing staff, and other allied health and community members revealed some common themes of rural paramedic practice.

From this study emerged common threads of expanded scope of practice, working with other health professionals, interactions with communities and

volunteers, education and training issues, and the cultural change within the ambulance service. This model of rural expanded scope paramedic practitioner combines the strengths of professional and volunteer/community models.

The four core activities of the model are:

- **R**ural community engagement
- **E**mergency response
- **S**cope of practice extension
- **P**rimary health care

These form the basis for the acronym RESP.

One section of this report was dedicated to education and training, recognizing the importance of education and training for a new paramedic model. It suggests that;

> *-" the knowledge and skill set discussed within the report should form the basis of a curriculum for a rural expanded scope paramedic;*
>
> *- a robust educational framework should underpin the model, with adoption of a three tiered educational framework at undergraduate, postgraduate, and continuing education levels;*
>
> *- geographically specific skills and procedures may be developed as part of continuing educational programs;*

- continuing research and evaluation of current and future education programs need to be conducted to ensure that programs meet the needs of RESP paramedics, communities and the health system; and

- give consideration to the establishment of a Rural Expanded Scope of Practice Centre of Excellence to provide research and postgraduate courses in this specialized area of pre-hospital care" (O'Meara, Walker et al. 2006: 69).

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2.4.8 'Primary Health Care' model

Further to the 'RESP' model of rural paramedic practice, other models are described based on Australian research. Investigation undertaken in 2007 and 2008 by the Council of Ambulance Authorities (CAA) identified themes to the expanded role of practice developed among rural and remote paramedics in Australia. The first of three models of rural paramedic practice emerging from this investigation is that of a 'Primary Health Care' model of practice.

The 'Primary Health Care' model is a formal model of rural and remote practice and is based on extended access to primary health care services to promote disease and injury prevention, in addition to provision of emergency care. In Queensland, development of a Graduate Certificate in Rural and Remote Paramedic Practice saw a population health approach designed to meet the needs of specific communities. In New South Wales, the model sees application in both rural and urban areas, and focuses more on extended treatment and referral rather than health promotion and disease prevention (Blacker, Pearson et al. 2009; Neumayer and Malone 2009).

2.4.9 ‘Substitution’ model

The second theme arising from CAA research relating to rural paramedic practice in Australia is that of a ‘Substitution’ model of paramedic practice. The idea behind the ‘Substitution’ model is to allow for leave coverage for doctors and nurses in remote and rural areas. In South Australia, paramedics provide for shortage of rural general practitioners, and in Alice Springs for a nurse shortage in the emergency department. In both cases, models developed by the ambulance service are in conjunction with hospitals and the health department.

In the South Australian model, skills used by paramedics are standard intensive care paramedic skills in assessment and treatment. Practice of some technical skills in hospital management such as sutures and plasters are in direct consultation with medical support. In the Alice Springs model, there is emphasis on limits or differences to normal paramedic practices (Blacker, Pearson et al. 2009).

2.4.10 ‘Community Co-ordination’ model

The final model relating to rural paramedic practice in Australia is that of a ‘Community Co-ordination’ model of paramedic practice. This model appears in three Australian states, Victoria, Western Australia, and Tasmania.

The basis of a ‘Community Co-ordination’ model is a primary focus on the recruitment, training and support of ambulance volunteers, whilst providing support to existing health services where required. In Victoria, the ‘Community Co-ordination’ model forms the basis for the Paramedic Community Support Coordinator (PCSC) in two townships, in Western Australia, there are three community paramedic roles, and in Tasmania, one community model is evident on the East Coast (Blacker, Pearson et al. 2009).

In a sense, this model is similar to O’Meara’s ‘Community/Volunteer’ model (2003a); however, it sees rural paramedics involved in more than volunteer training roles. Common to all ‘Community Co-ordination’ roles is the support of local volunteer groups as well as response to emergencies as necessary and as a complement to these volunteer units. Evaluation of the Victorian PCSC indicated improved confidence in local communities, and application of scarce resources in an efficient manner (Council of Ambulance Authorities 2008: 17). In addition to a volunteer support role, the Tasmanian community based paramedics demonstrated a high level of multidisciplinary practice (Mulholland, O'Meara et al. 2009).

2.4.11 Summary

Evidence from several Australian and international papers suggest that rural paramedics are practicing in varied roles, hence the development of several models of practice that describe these roles. Although much of this literature

arises from the work of one particular author (O'Meara 2002; O'Meara 2003a), later collaboration with a number of researchers has led to the development of one particular defining rural model of paramedic practice. The 'RESP' model of practice stands out from models of paramedic practice such as 'Competitive', 'Expert', 'Sufficing', and 'MODP' models in that while these previous models are transferable across rural and urban environments the 'RESP' model displays a unique rural focus. The 'RESP' model has at its core roles of community engagement, emergency care, scope of practice extension, and primary health care for rural paramedics (O'Meara, Walker et al. 2006). Further recent work by the Council of Ambulance Authorities reveals three further models of practice, these being the 'Primary Health Care' model, 'Substitution' model, and 'Community Coordinator' model.

The development of these unique models of rural practice offers descriptions of practice that suggest rural paramedics in Australia operate with distinct roles. There is some suggestion of merging between some models as they have developed, for example, the 'Practitioner' model incorporates aspects of 'Sufficing' and 'Community/Volunteer' model. Each individual model however, seems to describe distinct forms of rural practice and there is a gap in the literature comparing models of rural practice with each other to determine components that may be generic to each.

2.5 Is rural paramedic practice different from urban practice?

The presence of models of rural ambulance practice suggests that rural paramedics operate with distinct roles. However, such models have developed following research in rural areas. Without comparisons with urban paramedic roles, it is not possible to indicate if such roles are unique to rural paramedics. The purpose of this section is to examine literature comparing the practice of rural paramedics with that of urban paramedics in order to search for supporting evidence in the assumption of distinct rural paramedic practice. In order to complete the search I adopt a broad worldwide focus, and argue that although models of rural paramedic practice exist, evidence to suggest that rural paramedic practice is any different to urban paramedic practice is sparse and of narrow focus.

There is little evidence from studies into rural paramedic services and the communities they serve to suggest that rural practice differs from urban practice. Qualitative research using survey or interview of community and service stakeholders to determine what communities require of their paramedic services is a common method cited in the literature observing paramedic models (Fahey, Walker et al. 2003; Mason, Wardrope et al. 2003; O'Meara 2003; O'Meara, Kendall et al. 2004; Blacker, Pearson et al. 2009).

The data provides evidence that rural education and training requirements must match community expectations but does little to suggest that rural and urban education and training requirements are any different from each other.

Some literature comparing the practice of rural paramedics and urban paramedics deals with practical skills, however this skills based evidence has focused on singular aspects of paramedic practice, not the whole picture. Skills such as intubation and the ability of rural paramedics to perform to the same clinical skill level as their urban colleagues have been cited in the literature (Burton, Baumann et al. 2003: 352; Jemmett, Kendal et al. 2003: 961; Pratt and Hirshberg 2005: 173-175). Similarly, one study by Brown et al. (1996) demonstrated lower skills and knowledge by rural paramedics in several areas. However, again the picture is incomplete with the comparison made against a national competency, and urban paramedics were not included (pp. 254-260). One area noted in some literature is that of rural paramedics' inexperience with paediatric patients (Burton, Baumann et al. 2003: 352; Stevens and Alexander 2005: 13-15). This is despite suggestions of paediatric patients being at particular risk of trauma in rural areas (Franklin and Davies 2003: 293; Holland 2005: 623-624; Du, Finch et al. 2007).

Various articles reveal differences in the aspect of trauma, noting longer transport times, and more trauma cases in rural areas (Brismar, Dahlgren et al. 1984: 1037; Grossman, Kim et al. 1997: 723-728; Huang, Chen et al.

2001; Danne 2003; Gupta and Rao 2003; Smith, Boyle et al. 2004; Meuleners, Lee et al. 2007). One Scottish study used outcome measures of number of inpatient days, number of intensive care unit days, and mortality to determine if there was any difference in treatment in rural areas, with no significant differences apparent in the measures used (McGuffie, Graham et al. 2005: 633-637).

Some studies examined sports injuries in rural areas and suggested that a lack of qualified people, financial pressure against employing qualified first aid staff, and lack of time to develop sports safety are some concerns (Lower 1996: 29-31; Finch, Mahoney et al. 2003: 152-156) These were however, looking at trauma differences rather than differences in work practices of paramedics.

Other works indicating differences in rural/urban paramedic practice or experience are varied. In Nebraska, rural pre-hospital care patients were twice as likely to be admitted than in the urban area, with location of the patient in a rural setting more likely to be in a hospital or nursing home (Stripe and Susman 1991: 313). Rural patients receiving pre-hospital thrombolytic therapy in Sweden had more symptoms of heart failure after both 30 days and 1 year (Svensson, Karlsson et al. 2003: 267-270). In Canada, the turnaround time from presenting to an emergency department to being available for the next call was longer for rural paramedics, possibly due to increased delay in

preparing for the next response (Segal, Verter et al. 2006: 381). Australian admission rates for rural and urban patients suffering from congestive cardiac failure were significantly higher in rural areas (Ansari, Henderson et al. 2003: 216-270), and paramedics in rural Australia were required to deal with asthma patients who had misconceptions regarding ambulance use (Morgans, Archer et al. 2005: 118-120).

One study even determined the rate of ambulance crashes in Tennessee was higher in an urban area, but possibly because of speed and distance, the severity of injuries, and the likelihood of non restrained passenger injury was greater in a rural environment (Weiss, Ellis et al. 2001: 52). In contrast with this, later findings in a study of ambulance crashes in Pennsylvania again indicated higher rates of ambulance crashes in urban areas, but with lesser injuries in rural areas (Ray and Kupas 2007: 417-418)

Only one article was found that directly compares the profiles of rural paramedics with urban paramedics. Some differences were noted, with urban paramedics being younger, more likely to be non-volunteer, educated to a higher level, and experience lower burnout (Chng, Collins et al. 2001: 118-122). Further investigation is required however, in that the study only included those people who had presented for a state conference in Texas, qualifications varied, and there was no attempt made to verify credentials (Chng, Collins et al. 2001: 123).

Direct comparisons of rural and urban roles are lacking in the paramedic literature, but not so with literature from other health disciplines. Alford and O'Meara (2001) for example, compared the roles of rural and metropolitan district nurses. The study revealed that unlike their metropolitan colleagues, rural nurses travel long distances and put in many hours of unpaid work to manage patient case load (pp. 287-288). Alternatively, in another example, a study of Scottish midwives in rural and urban areas found little difference i the confidence needed to carry out the majority of skills identified between rural and urban practice. However, where differences did appear, they were not always in favour of urban practice (Hundley, Tucker et al. 2007). Differences in rural and urban practice with other health professionals are further dealt with in section 2.6 (p. 45).

2.5.1 Summary

It is difficult to state that rural paramedics in Australia are practicing in distinctly different roles to urban paramedics without direct comparisons of rural and urban paramedic roles. Differences with urban practice must exist for rural models such as the 'RESP' model, 'Primary Health Care' model, 'Substitution' model, or 'Community Coordination' model, to be valid as descriptions of rural practice. Differences in some case types are evident, with rural health workers having less experience with paediatric patients, or more trauma cases in rural areas. However, there is a gap in the literature with

no studies from Australia specifically comparing rural and urban paramedic practice.

2.6 Lessons from other disciplines

It is necessary to examine literature from other health care disciplines in order to broaden the perspectives, and determine if other health care disciplines operate with distinct rural speciality. The purpose of this section is not to offer a critical analysis of other disciplines but to provide an overview of how distinct rural specialties are developing, and the directions taken to ensure appropriate education and training for recognition of these specialties.

I present the argument that rural and urban differences do exist in some health care disciplines, with the formation of distinct rural specialties. The establishment of rural clinical schools, distinct curricula, and rural clinical placements support this argument in part. Within these rural specialties is the presence of multidisciplinary practice, and I examine the implications this has for task substitution between various disciplines.

Finally, the literature suggests that all levels of education and training need consideration, including continuing professional development. The literature also raises issues around delivery of education and training related to rural specialties and their isolation from major services, and although the use of

electronic technology plays a role, there should be no neglect of personal contact.

2.6.1 Distinct rural specialties

Although comparisons of rural and urban paramedic practices are scarce, there are indications of rural and urban differences when looking at the medical profession in Australia. A study by Allen and Schaefer (2005) surveyed rural general practitioners and revealed their education and training preferences, included anaesthetics, Aboriginal and Torres Strait Islander health, population health, renal medicine, cardiology, teaching skills, obstetrics, neonates, arrhythmias, fracture management, tropical medicine, and therapeutics. Urban general practitioners on the other hand were more likely to select menopause, travel medicine, and palliative care (p. 339). An earlier study by Tolhurst, McMillan et al.(1999) revealed low levels of confidence reported by rural GPs in paediatric, cardiovascular, and respiratory emergencies (pp. 91-95), and (Humhreys, Jones et al. 2003) noted a trend toward the need to provide more complex services with increasing rural or remoteness.

In asking medical students to comment on rural and urban general medical practice Denz-Penhey and Murdoch (2007) revealed several differences. The students stated the need for speciality skills such as obstetrics and emergency skills in a rural area, with such skills requiring a broader depth of knowledge.

Rural teachers presented greater independence than their urban colleagues did, the approach with rural health was less biomedical and more holistic, and there was an awareness of high personal costs and the need for more coping mechanisms in rural areas.

With such differences evident, it is not surprising that some health disciplines consider rural practice as a speciality. One of these is the profession of medicine, and there is the suggestion that rural medicine may not only be a speciality practice but is also developing as a distinct health care discipline. With several citations (Wronski 2003: 161; Smith and Hays 2004: 68) an article by Strasser (1995) outlined four criteria by which to determine whether rural medicine is a separate discipline.

1. *Formation of an academic body representing the discipline*
2. *Presence of an intellectually rigorous training program*
3. *Emergence of a unique literature*
4. *Recognition from outside the discipline*

Smith and Hays (2004) determined that rural medicine did indeed meet three out of the four criteria. It was shown to be different in context, content, and process of care, but undecided on whether there is sufficient external recognition (Smith and Hays 2004: 71). Offering a different perspective, Murdoch and Denz-Penhey (2007) further argue that medical practitioners

with an Australian College of Rural and Remote Medicine (ACRRM) qualification attract Medicare benefits at a higher rate than general practitioners, providing recognition of a rural discipline.

It may be possible to argue contrary to the presence of separate rural disciplines. Murdoch and Denz-Penhey (2007) stated that despite Medicare benefits, ACRRM has had difficulty convincing the Australian Medical Council of an independent rural medical discipline. Allen and Schaefer (2005) also made mention of the danger in creating two separate disciplines, as there are also many similarities between each (p. 341).

Regardless of the recognition of separate rural disciplines, the differences in rural and urban medical practice demand specialization in rural health care and the meeting of this demand is particularly evident in the establishment of individual rural clinical schools. Designed to bring health care education to rural areas these clinical schools are seeing some success around Australia. To promote their success, Jones, De Witt et al. (2005: 274) suggested development of a rural curriculum, and education within metropolitan medical schools regarding the positive aspects of rural placement. Murdoch and Denz-Penhey (2007) suggest rural clinical schools work because they are located where a need exists.

Further to these rural clinical schools, there is evidence of development of rurally oriented curricula, and proposals to enhance education and training in rural health specialties. In order to suit the health needs of rural and remote communities James Cook University in Queensland developed medical education designed to meet specific rural and indigenous needs. Selection procedures also target rural students including Aboriginal or Torres Strait Islanders (Hays 2001). Suggesting a more generalized approach, Arvier, Walker et al. (2007) recommend a specific postgraduate course in emergency medicine for rural medical practitioners.

Medicine is only one health profession in a rural area however, and recognition of rural practice appears in other areas. Nursing is developing a distinct rural speciality, with many nurses in rural communities informally performing duties that are an extension of their initial training (Hegney 1996: 3-4; Roberts 1996: 171; Stark, Nair et al. 1999: 276; Offredy 2000: 280; Wynne, Lodder et al. 2002: 94; Usher and Lindsay 2003: 84; Bagg 2004: 4). This has led to legislation and educational courses to be introduced, in order to formalize the activities of rural nurses (Sullivan, Dachelet et al. 1978: 973; Roberts 1996: 174; McCann and Baker 2002: 176; Plager, Conger et al. 2003: 407; Usher and Lindsay 2003: 84; Bagg 2004: 4). This example from the nursing profession is important. Not only is there recognition of differences between urban and rural practice, but also the establishment of education and legislation needed to formalize rural practice.

Literature suggests that some rural health care professions in Australia are developing rurally oriented roles. These roles are sufficiently different to those in urban areas, and evidence of this appears in proposals to include medicine as a distinct rural discipline, the creation of rural clinical schools, and the development of rural curricula. In nursing, the establishment of education and legislation is formalizing rural practice as a distinct discipline.

2.6.2 Rural clinical placement

The literature supports existence of distinct rural health care specialties, and part of the evidence for this is establishment of rural clinical schools and rurally oriented curricula. I now elaborate on the topic of rural specific education for health professionals and discuss how education and training for several health care disciplines is adapting to the distinct nature of rural health care practice by rural clinical placement of health care students. Evidence is presented that those from rural backgrounds are more likely to take up rural careers, and that there is general acceptance of rural clinical placements among students. The length of time for suitable clinical placement is debatable.

Part of the support for rural clinical placements is that those with previous rural backgrounds and rural experience seem more likely to take up rural careers. There is strong support in the literature that those with rural

backgrounds or previous rural experience are more likely to take up a rural career (Azer, Simmons et al. 2001: 179-181; Hegney, McCarthy et al. 2002: 181; Laven and Wilkinson 2003: 281-283; Australian Medical Workforce Advisory Committee (AMWAC) 2005: 16-18; Matsumoto, Okayama et al. 2005: 221-224; Somers, Strasser et al. 2007; Dalton, Routley et al. 2008). Being able to extend this rural experience to those of an urban background will enhance an understanding of rural health care practice.

Exposure to the rural environment by clinical placement also helps reduce some of the barriers faced by health care workers in rural areas. Barriers such as cultural issues, geographical isolation, financial cost, health profession stereotypes, insufficient information, and obligation to family (Durey, McNamara et al. 2003: 148-149) have been noted. For those not previously aware of these rural barriers, the practice of rural placement has been a useful learning experience. Nurses in Tasmania undertaking rural placement have reported that although health professionals in rural areas were highly regarded, there was a close scrutiny on personal behaviour in social settings (Dalton, Butwell et al. 2002). Similarly, practicing rural nurses often found their roles had a high level of job satisfaction, but also reported a degree of frustration. This was particularly so when people misunderstood their role, there was lack of recognition, or inadequate remuneration. Although a rural lifestyle is appealing, lack of anonymity in a rural community, and a sense of lack of control of private life can be a major problem (Hegney 1996).

Educating the undergraduate regarding rural practice will increase the understanding of the specific requirements of rural practice.

Rural placements have received generally favourable responses from those who undertake them, despite the presence of some initial anxieties. Course assessments reveal that students are satisfied with the education and training offered (McAllister, McEwan et al. 1998: 195-196; Talbot and Ward 2000: 18-20; Taylor, Blue et al. 2001: 306-310; Andersson, Lennox et al. 2003: 62-65; Worley, Esterman et al. 2004: 208-209; Worley, Martin et al. 2008: 178). Nursing students also report similar favourable responses to rural placement (Armitage and McMaster 2000: 178; Dalton, Butwell et al. 2002), although there is some evidence that nursing students note some aggression toward them by ward nurses (Lea and Cruickshank 2007). Some anxiety was initially reported by students undertaking rural placements as to whether the experience and education they were receiving would prepare them for final exams, however these students fared as well in assessments as their metropolitan counterparts (Kamien 1996: 153-158; De Witt, Migeon et al. 2001; Jones, DeWitt et al. 2007).

The length of time for rural placement is of some debate. In Australia, longer rural placements for medical students of up to one year are more optimal than shorter ones of six weeks. From voluntary questionnaires students reported they were able to contribute more to the health care team, felt they had more

opportunity to consolidate learning opportunities, and were more part of the overall community (Denz-Penhey, Shannon et al. 2005). In contrast, a study of nursing graduates found that a shorter rural placement (less than 4 weeks) during training was more strongly correlated with taking up rural practice (Playford, Larson et al. 2006: 15-18). Further study by Dalton, Roultley et al. (2008) did however show no significant intention to take up rural practice among pharmacy students who had undertaken only 5 days rural placement. The debate of the length of time of rural placement is ongoing, and in a study by Schoo, McNamara et al. (2008), among the four professions of medicine, nursing, dentistry, and allied health, longer rural placements may encourage urban professionals to take up rural careers, however the authors concede the need for further investigation.

In order to allow students to gain experience of rural health care specialties, education and training of several health professions involves the clinical placement of students in rural areas. Those students with previous rural backgrounds seem more likely to take up rural careers, and by exposing all students to rural health care practice, as well as some of the barriers faced in rural communities, education and training can create a comprehensive picture of the rural health practitioner. Rural clinical placements have reports of approval by those who undertake them, although there is still some debate as to the most appropriate length of time for such placements.

2.6.3 An Inter-professional approach

Several health disciplines are moving toward rural specialization; however, individual health disciplines do not stand alone as separate entities in the communities they serve. In light of the development of education and training to suit the specialist nature of rural health care, evidence from the literature indicates a growing awareness of, and supports the value of an inter-professional approach in health care education and training.

The presence of inter-professional education and training for health professionals is evident in several studies. In Sweden, medical students undertook inter-professional practice on an orthopaedic ward with encouraging comments from those that undertook the experience (Wahlstrom, Sanden et al. 1997: 428). One example from rural and remote Canada saw the bringing together of nurses, physicians, occupational therapists, social therapists, as well as teachers, and theologians in an educational program designed to meet the requirements of working in rural communities (Medves, Paterson et al. 2008). In Australia the Rural Inter Professional Education (RIPE) project places third year medical and nursing students in rural Victoria, (McNair, Brown et al. 2001: S23-S25; Stone and McNair 2003: 8-14), and in Tasmania an inter-professional approach was used with 10 medical, pharmacy, and nursing students (Albert, Dalton et al. 2004: 30-31). The Tasmanian project has since developed to become the RIPPER initiative (Rural Interprofessional Program Education Retreat) in which students from

these disciplines participate in a two-day workshop involving high and low fidelity simulation, role-playing, and reflection (Whelan, Spencer et al. 2008).

In light of such outcomes, there are proposals to enhance the multidisciplinary aspects of education and training for health disciplines. Del Mar and Dwyer (2006) suggest a new healthcare workforce utilizing an inter-professional approach. Rather than operating as individual silos of health care, each profession defending its own walls, the solution proposed is a common entrance point into health education, from where practitioners then move "laterally" or "vertically" into different health professions and specialties (pp. 32-34). Again, an inter-professional approach is supported by the views of Skinner (2006), who argues that medical training should become more modular, allowing a doctor to construct his or her own training scheme through a mix of learning modules, across a number of disciplines. Modular training may also have a role in continued medical education and accreditation of overseas doctors (p. 36).

The inter-professional nature of the training of health care professionals is seeing practical application as well as proposals for further development. Favourable outcomes for current inter-professional programs indicate the ability of these programs to create a mutual awareness among differing disciplines of health care roles.

2.6.4 Task substitution

Inter-professional education and training is a way of educating health professionals on the roles of each discipline, and in 2.6.3, I provided particular examples based on rural practice. Multidisciplinary training however, may have implications of 'task substitution' for health care disciplines. In order to address the effect these implications may have on education and training for rural health practitioners I now examine the literature for current viewpoints on the subject of 'task substitution'.

With a shortage of General Practitioners (GPs) in rural areas, one solution for this shortage is the training of other health practitioners to partake in some of the duties of the rural GP. As an example, rural nurses in Australia are seeing legislation changes to allow formalization of such extended practice (Sullivan, Dachelet et al. 1978: 973; Roberts 1996: 174; McCann and Baker 2002: 176; Plager, Conger et al. 2003: 407; Usher and Lindsay 2003: 84; Bagg 2004: 4). One overseas study found that more than two thirds of the medical visits in rural areas were for acts that nurses can carry out. Common medical visits were for conditions such as respiratory tract infections, prescription of drugs for chronic diseases and blood pressure, and diabetes mellitus. The study looked at two remote areas in Crete over a year, and suggested that legislation should change to allow replacement of junior doctors with properly trained nurses (Vlastos, Mpatistakis et al. 2005: 361-363).

Internationally, the Physician Assistant (PA), or Non Physician Clinician (NPC) role is one particular way in which other disciplines assist in dealing with this shortage of rural GPs. In one example from Africa, some physicians and nurses raised the concern of professional dilution of skills with the introduction of Non Physician Clinicians however, the NPCs did play an important role in HIV/AIDS treatment programs (Mullan and Frehywot 2007: 2158, 2161-2162). Physician assistant roles in the UK are developing in a way similar to that of doctors working in the primary care, and accident and emergency settings, and by creating a separate discipline, nurses are left to nursing duties (Parle, Ross et al. 2006: 13-17). In the United States one third of Physician assistants work in areas of primary health care shortage providing comparable services to a GP (Drozda 1992: 46-48), and tend to be used in otherwise underserved rural populations (Staton, Bhosie et al. 2007: 32). PAs increase productivity of rural practices in terms of number of patients seen, and both improve the workload and income of the employing doctor. In California PAs and Nursing Practitioners rank ahead of primary care physicians in the likelihood of working in rural locations (Hooker 2006: 5).

The Royal Australasian College of Physicians (RACP) supports task sharing and the development of a team-based approach to patient care. Sewell (2006), in presenting the RACP view suggested that physicians and paediatricians

offer specialist care and that diagnosis and development of management plans is not easily shared. However, the implementation of plans, specific tasks, and working within community based teams will be avenues of patient care that are increasingly shared (p. 23).

Development of extended scope of practice, or indeed new disciplines such as Physician Assistant in rural areas can face political challenges despite support of organizations such as the RACP. The Australian Medical Association (AMA) takes the stance that any reforms must improve what doctors and other health professionals do, and not risk any reduction in care. The AMA supports synergy of health professional skills rather than creating competition between overlapping clinical roles. The AMA does not support the Productivity Commission view that task substitution is a solution for medical shortages, their arguments being that it could very well lead to a two-tiered system that takes from one profession to create another. The example of the practice nurse is given, where, a short term rise in this new position is created by taking from nurses in hospitals and nursing homes (Yong 2006: 27-28).

At a more elementary level, doctors may value some of the tasks proposed for handling by other professions. Removal of more simple tasks may affect the sense of connection between the doctor and patient, and there is suggestion that quick tasks such as medical certificates, immunizations, and repeat prescriptions provide a welcome relief, and an opportunity to “catch up”.

Kidd, Watts et al. (2006) suggest various safeguards should task substitution be implemented. These involve areas such as informed consent, so that patients know exactly who is treating them, effective medical indemnity insurance, and appropriate financing to ensure viability (pp. 20-21).

The presence of rural specialties and multidisciplinary practice in rural areas leads to questions of how health disciplines view the possibility of task substitution among health care professions in these areas. Internationally, appropriately trained specialist disciplines such as Physician Assistant or Nurse Practitioner are appearing as means by which to deal with shortages of General Practitioners. In Australia, levels of support for such practice vary between organizations such as the Royal Australasian College of Physicians and the Australian Medical Association. However, by regarding such specialist or multidisciplinary practice as task sharing, or synergy of professional skills, rather than task substitution, there is some common ground between organizations.

2.6.5 Continuing professional development

Both undergraduate and postgraduate education requires the support of continuing professional development. In this section, I examine the literature concerning the role of continuing professional development specific to the rural health practitioner. Context and content become important as situations may differ between individual rural areas. Isolation from major services is

influential in the ability to conduct continuing professional development programs.

Continuing professional development in rural areas is a matter of some concern for health practitioners. Evidence from literature indicates general low satisfaction with continuing professional development as a support system worldwide. In Japan (Matsumoto, Okayama et al. 2004: 47; Matsumoto, Okayama et al. 2005: 219), Malaysia, (Yadav and Lin 2001: 58-61) and Australia (MacIsaac, Snowdon et al. 2000: 71-72).

Both context and content of continuing professional development appear to be important considerations. MacIsaac, Snowden et al. (2000) looked at rural General Practitioners (GPs) in two states, Queensland and Victoria. The issue of ongoing education was less prominent with Victorians, possibly because of reduced distances and proximity to education sessions (pp. 71-72). Literature from the late 1990s dealing with rural and remote nursing raised the issue of gaining access to education and training programs specific to the context of practice (Hegney, Pearson et al. 1997; Spencer, Bull et al. 1998; Stephenson, Blue et al. 1999). Further, General Practitioners in remote rural towns regarded cross cultural medicine and Aboriginal health as significantly under serviced in terms of continuing education. Conversely, GPs in large rural centres considered small business management as significant (Booth and Lawrance 2001: 267-269). In rural South Australia a significant number of

the GPs asked for skills and training in personal coping rather than clinical skills (Gardiner, Sexton et al. 2005: 153-154).

One of the main issues for continuing professional development in rural areas seems to be that of isolation from major services. MacIsaac, Snowdon et al. (2000) mention proximity, and availability to attend education sessions as resulting in greater satisfaction with continuing education and training in rural areas (pp. 71-72). In one example, one way of overcoming isolation appears in the utilizing of metropolitan clinical placement for Queensland's rural allied health professionals. Occupational therapy, speech pathology, and dietetics professionals can participate in voluntary placements at a metropolitan paediatric hospital. Improved clinical skills, networking with metropolitan staff, access to the metropolitan hospitals clinical and management resources, observation of the metropolitan services, and general support, were all noted as successful elements of this program (Parkin, McMahon et al. 2001: 298-301).

Continuing professional development for health practitioners is a matter of some concern, with low satisfaction in this area appearing in several countries. In rural areas both context and content of professional development programs is important, and programs need to adapt depending on each of these measures. One of the main issues facing those who educate and train rural health professionals is how to overcome the isolation in rural areas.

2.6.6 Delivery of education and training in a rural environment

One method in use to advance the delivery of education training in rural areas and overcome the barriers associated with isolation from major services, is the use of electronic technologies. In this section, I discuss some of the types of technology raised in the literature and in relation to the delivery of education and training to rural health practitioners. An important consideration in the use of such technology is that its use can be in conjunction with face-to-face interaction.

The use of video and audio conferencing, the internet, and computer simulations are among a variety of technologies that have been proposed to help overcome some of the problems of educating rural and remote heath care students (Delaney, Lim et al. 2002: 170-171). This use of telehealth has received favourable responses from participants (D'Eon and Yeung 2001: 36-37; Yadav and Lin 2001: 58-61; Ariff and Teng 2002: 101-103; Faulkner and McClelland 2002: 70-71; Smith, Bensink et al. 2005: 286-292; Kildea, Barclay et al. 2006: 6-10; Goodale, Spitz et al. 2007; Van Ast and Larson 2007).

Electronic technology should not be regarded an instant solution to education and training delivery in rural areas. Users must be familiar with the devices, and the technology must be available. Not knowing how to use the internet or CD-ROM instructional devices have been listed primary barriers to the use of

computer based education (Mamary and Charles 2000: 173-174). Users in Whyalla, South Australia found that whilst hardware was readily available, the broadband connections needed to facilitate effective delivery were not (Newbury and McKenzie 2004: 158). Users of an online library established for rural maternity health workers in the Northern Territory reported initial problems with hardware, and both managers and users cited cost factors in the access of internet services (Kildea, Barclay et al. 2006: 6-10).

One suggestion to overcome the problem of internet access is that of a hybrid system. This system has large multimedia files placed on a CD-ROM, merging with internet documents and computer mediated applications (Curran, Hoekman et al. 2000: 107) Remote education of pharmacists in Australia made use of a hybrid system where internet access was a problem. Internet access and the ability to participate in forum discussion was the preferred method of education (Marriott, Taylor et al. 2005: 84-89).

The use of electronic media needs consideration as only one way of delivering education and training to rural health professionals. The use of up-skilling workshops have been used with success, with remote health GPs and nurses in South Australia shown to respond favourably to a workshop in psychiatric conditions (Chur-Hansen, Todd et al. 2004: 276-277). Rogers Dunn et al. (2008) also mention the use of specific workshops, and the importance of education and training combined with support and supervision

is mentioned in several papers (Battye and McTaggart 2003; Rygh and Hjortdahl 2007).

Electronic means of education and training such as video and audio conferencing, the internet, and computer simulations have the ability to overcome the problems associated with isolation from major services. The use of such technology however, can present problems, especially with lack of appropriate training in its use, or that the technology itself is not suited to a particular area. Importantly, direct contact with rural health care workers still forms an essential part of rural education and training.

2.6.7 Summary

There is little evidence of different roles for rural and urban paramedics in Australia, however looking at other health professions tells a contrasting story. It becomes evident that rural and urban differences exist among several health care professions, and that these differences inform the development of rurally focused education and training.

Several health care disciplines have examples of rural specialties with directed education and training. There are proposals to consider rural medicine as a distinctly separate discipline, and rural nursing is witnessing formalization in the establishment of education and legislation. The establishment of rural clinical schools and rurally oriented curricula is further

evidence of rural specialization, and the need to provide education and training to suit. Part of this education and training is the development of rural clinical placement for students in order to promote exposure to rural health care practice.

There is an inter-professional nature to the training of health care professionals in rural areas. Favourable outcomes for inter-professional programs indicate the ability of these programs to create a mutual awareness among differing disciplines of health care roles. Inter-professional training and practice is not one profession taking over the role of another, more a sharing of tasks among various professions in order to provide optimal community health care.

With continuing professional development a concern for some health practitioners, the message is clear that all levels of education and training need consideration when developing education and training oriented to the rural health care practitioner. Both context and content of professional development programs is important, as is the issue of how to overcome the isolation from major services. Part of the way in which this isolation can be dealt with is by the use of electronic media, however direct face-to-face contact should remain a part of the education and training process for rural health professionals.

2.7 Education and training for rural paramedics

Appropriate education and training is an important process in the support of rural specialties among several health care professions. With this in mind, the purpose of this section is to examine the suitability of education and training to the needs of rural paramedics. Examination of the literature concerning education and training for rural paramedics follows the education and training process through the levels of undergraduate, postgraduate and continuing professional development. In parallel with the information from other rural health practitioners, I also consider some techniques by which to deliver education and training to rural paramedics. Several instances of a mismatch between paramedic practice, education, and training are an important finding in the paramedic literature.

2.7.1 Undergraduate education and training for rural paramedics

The search for evidence of rurally oriented education and training for undergraduate paramedic students reveals scarce current literature on the subject. In the previous section examining other rural health care disciplines, there is evidence of rurally specific education and training in the presence of rural curricula, and in rural clinical placement for health care students. Literature pertaining to the paramedic undergraduate offers an insight to the Case Based Learning used in education and training, and the changing face of education and training for paramedics, however it is not rural specific. There

are some suggestions emerging from literature and practical application, for a future focus on rurally based education and training for undergraduate paramedics.

A search of *Medical Education, Clinical Teacher, the Journal of Continuing Education in Health Professions,* and *Advances in Health Sciences Education* using the same criteria as explained in Section 2.3 (p. 24), revealed little relevant to undergraduate training or paramedic education with a rural focus. Articles located mention simulation training, occupational stress, and specific treatments such as intubation or treatment of hypoglycaemia. A general search of PubMed revealed similar results. Search terms used included, paramedic, ambulance undergraduate, training, education, prehospital, and emergency medical technician or emergency medical technician (EMT). The work of ambulance volunteers in rural areas appears to have more evidence than does the development of the paramedic undergraduate (Fahey, Walker et al. 2002; Fahey, Walker et al. 2003; O'Meara 2003; O'Meara, Kendall et al. 2004).

Some articles are not specifically rurally oriented, but mention the methods used in undergraduate paramedic education and training. Case Based Learning (CBL) has a large part to play in the education and training of the undergraduate paramedic. Here, cases and problems are presented in order to develop necessary knowledge and skills (Williams 2004; Willis, Pointon et al.

2009: 27). The use of simulation is a good example of Case Based Learning, as are internet resources or materials such as podcasting or DVDs used to deliver education and training to students remote from a classroom situation (Williams and Upchurch 2006; White and Bryant-King 2008; Williams and Bearman 2008).

A paucity of rurally oriented undergraduate ambulance literature does not necessarily mean undergraduate paramedic education has been stagnating. In Australia and the United Kingdom, paramedic education is experiencing higher professional recognition through involvement in several universities. The Australian experience has seen paramedic education evolve from ambulance courses conducted by various employer groups, to the TAFE (Technical and Further Education) sector, and since 1994 to a professional paramedic degree through a number of universities. Joint paramedic/nursing degrees are also offered through several universities (Lord 2003; Charles Sturt University 2008; Queensland University of Technology 2009; Monash University 2009b), and the Council of Ambulance Authorities is recognizing a need to re-shape existing undergraduate education (Willis, Pointon et al. 2009: 16).

In looking toward the future, study within Australia suggests that education of the undergraduate ambulance paramedic should form one tier of three of rural education and training. Education toward a rural health career should involve

an inter/multi professional approach using common learning units spread across various disciplines, with students attaining core attributes in knowledge and understanding, skills, and attitudes relating to professional behaviour (O'Meara, Walker et al. 2006: 46-48). Practical evidence of this comes not from the literature but from a memorandum outlining initial work through Flinders University in South Australia in which undergraduate paramedic students undertake twelve month rural clinical placements (Flinders University 2009a).

Although at the time of writing this thesis, literature is scarce concerning rurally focused undergraduate paramedic education and training, there has been development of undergraduate education and training in general. The Case Based Learning approach to education and training is making use of up to date technologies, and several universities are offering joint paramedic and nursing qualifications. There has been general movement away from past employment-based models of education and training. With examples of rurally based undergraduate work appearing through Flinders University, literature pertaining to undergraduate paramedic education and training may emerge in coming years as further programs develop.

2.7.2 Postgraduate education and training for rural paramedics

Evidence of undergraduate paramedic education and training with a rural focus is scarce; however, other levels of education and training require investigation. One of these levels is that of the postgraduate paramedic, with the terminology of postgraduate referring to any education and training undertaken following completion of undergraduate studies, and not only university or higher education based courses. This section presents an examination of the literature relating to evidence of postgraduate education and training for rural paramedics. Not all literature supports an extended skills base in rural areas, and this is particularly so in the case of critical care. The 'Paramedic Practitioner' of the United Kingdom however, provides a good illustration of specific education and training for specialist practice in both rural and urban areas. In Australia, there is fledgling development of specific postgraduate education and training for rural paramedics.

Rural specialization demands a specific skills base; however, not all literature supports the idea of paramedics in rural areas as having a postgraduate extended skills base. Potential difficulties in training of paramedics for seldom-used skills are one such area. For example, training deficiencies, poor supervision, and infrequent intubation experiences were given as possible reasons why rural emergency medical technicians (EMT) were not as successful at intubation as their urban counterparts (Bradley, Billows et al. 1998: 29-31). Similarly, in an example of the 'Expert' model, one Scottish

study suggested that suitably trained paramedic and medical staff use helicopters to provide rural ambulance response, rather than local rural paramedics (Caldow, Parke et al. 2005: 54-55) Anecdotal evidence from urban receiving physicians had some patients physiologically compromised prior to flight or worsening en route. The solution was to establish an air retrieval service with physicians and paramedic staff receiving specific training in aero medical medicine (Whitelaw, Hsu et al. 2006: 76-78). A commentary, again from Scotland, argued that aero medical retrieval may take precedence over land-based care, in that with rural geography and time constraints, a helicopter retrieval team would be necessary. It would therefore be impracticable to consider any further training for on ground rural paramedics (Carlin 2005: 296).

Counter to these views however, there are calls to recognise the levels of critical care that rural paramedics can provide, and for an increase in education and training for rural paramedics in critical care skills. An earlier Australian study stated different roles for the medical retrieval team and rural paramedics and that rural paramedics still provided an important high level of care (Gilligan, Griggs et al. 1999: 618). One Scottish study into rural-urban inequities in ischaemic heart disease recommended the upgraded training of both rural GPs and paramedics in the administration of pre-hospital thrombolytics (Levin and Leyland 2006: 147-160).

Rural models of paramedic practice however, incorporate more than critical care skills, as the RESP (Rural community engagement, Emergency care, Scope of practice extension, Primary health care) so well outlines (O'Meara, Walker et al. 2006). Literature looking at postgraduate education and training designed to manage similar extensions to practice provides a more complete picture of postgraduate education and training for rural paramedics.

The ‘Practitioner’ model in the United Kingdom provides evidence of specialized postgraduate paramedic education and training and demonstrates both urban and rural applications. The ‘Practitioner’ model defined by O’Meara (2002) has aspects of an extended scope of practice and high levels of community participation (p. 308). In the United Kingdom (UK), there has been some formalisation of these aspects, although the ‘Practitioner’ role lacks standardisation. ‘Practitioners’ in the UK may be referred to as ‘Emergency Care Practitioners’, ‘Community Paramedics’, or ‘Paramedic Practitioners’, and undertake varied types of postgraduate education and training (Woollard 2006).

Training for Paramedic Practitioners specifically deals with elderly patients experiencing minor conditions who may not need transport to hospital. Paramedic skills include;

- *"The assessment and treatment of minor injury, minor wounds, wound infections, soft tissue injuries and the requesting of radiographs where appropriate;*
- *The assessment of minor head injury;*
- *The assessment of mental function;*
- *The assessment of the older patient with a fall; and*
- *The social care assessment of the older patient"* (Mason, Wardrope et al. 2003: 197).

Whereas the above-mentioned Paramedic Practitioner example comes from an urban location, rural examples of the 'Practitioner' model itself appear with Community Paramedics and Emergency Care Practitioners. One Community Paramedic programme incorporates paramedics trained to work from general practitioner (GP) surgeries, and support primary care teams to undertake scheduled and non-scheduled home visits and arrange hospital admissions (Bilby 2004). Emergency Care Practitioners (ECP) have similar roles, with time divided between local minor injury units and ambulance stations (Cooper, Barrett et al. 2004: 616-617; Woollard 2006).

Initial assessments of training for this type of extended scope of practice have been favourable. Paramedic Practitioners reported increased knowledge resulting in improvement in their overall clinical practice. Among the suggestions by staff was that such training was beneficial to the degree that

all paramedics should be educated to the same level. However, some also felt that because of the role they would gain less practical experience in cases such as trauma (Squires and Mason 2004: 725-726). Assessment of an Emergency Care Practitioner (ECP) scheme led to similar reports of increased knowledge and improved clinical practice. Fears that paramedic practitioners may become de-skilled in areas such as major trauma may prove to be unfounded, Cooper, Barrett et al (Cooper, Barrett et al. 2004: 615) for example indicated that ECPs attended significantly more trauma patients that regular paramedics. Further studies will reveal more as the 'Practitioner' roles develop.

One of the keys to such 'Practitioner' models is a cohesive education base. A report into the first cohort of ten Emergency Care Practitioners in the NHS East Anglian Ambulance Trust indicates the importance of design and development of postgraduate education. An initial portion of the training was designed by the participants themselves, and paramedics undertaking education sessions were reported to take a while to become accustomed to the concept of being able to influence course content, and how it was conducted. However, although a lack of understanding of roles and competencies between professional groups was initially apparent, with development of networks throughout the community, and clinical placements, the course seemed to be successful in terms of clarifying the developing role of the ECP (Doy and Turner 2004: 365-366). The East Anglian example is only one of

several postgraduate courses in paramedic extended scope of practice in the United Kingdom, other reports mention the considerable variation between Emergency Care Practitioner or Paramedic Practitioner courses in the United Kingdom and call for a national training agenda in order to maintain some consistency (Gregory 2006; Woollard 2006). It is partly for such reasons that the British Paramedic Association (BPA) was formed in order to engage with unions, employer groups, and educational institutions in order to ensure professional regulation of education and practice (Whitmore and Furber 2006).

Whilst the 'Practitioner' model has urban as well as rural applications, there is evidence of more specific postgraduate education for rural paramedics appearing in Australia. At the time of commencing this study, rural postgraduate paramedic education in Australia had begun to develop with a proposed Graduate Certificate in Rural and Remote Paramedical Practice at James Cook University in Queensland (JCU). The concept behind the development was to enable experienced paramedics to complete a two year post graduate degree and assist doctors in a variety of medical procedures such as minor surgery, investigative procedures such as endoscopies, anaesthetics, and request of diagnostic tests (Australian Government Productivity Commission 2005: 254). Development of the James Cook University course utilized international evidence, and drew on models of paramedic practice (Raven, Tippett et al. 2006). During the process of this

study the JCU course had commenced, and as well as the skills previously listed, a strong community based and primary health care theme was established. An initial assessment in 2008 indicated that paramedics felt that their skills in population health had increased, with many incorporating these skills in their everyday work practice (Reeve, Pashen et al. 2008: 372-375). The future for rural specific postgraduate education and training in Australia may see further expansion, and other options may exist for formalized education through inter-professional courses such as the Graduate Certificate/Diploma/Masters pathway offered by Flinders University's Centre for Remote Health at Alice Springs (O'Meara, Walker et al. 2006: 64).

Despite evidence from other health care disciplines indicating a need for specific rural education and training, not all literature supports paramedics in rural areas having postgraduate support for an extended skills base. In the case of critical care, there are even suggestions of using urban-based services such as aero medical teams rather than up skill rural paramedics. However, specific postgraduate education and training for rural paramedics is appearing both internationally, and in Australia. The 'Practitioner' model in the United Kingdom provides evidence of postgraduate paramedic education and training designed for speciality practice, and initial assessments of this education have been favourable. Whilst the 'Practitioner' model has urban as well as rural applications, there is evidence of more specific postgraduate education for rural paramedics appearing in Australia. The appearance of

courses such as the Graduate Certificate in Rural and Remote Paramedical Practice at James Cook University indicates confidence in the requirement for unique rurally based education and training requirements for paramedics in Australia.

2.7.3 Continuing professional development for rural paramedics

With the appearance of postgraduate courses for rural paramedics, and some evidence of limited undergraduate direction, there is a need for continuing professional development in order to maintain and further develop such speciality practice. Section 2.5.5 (p. 58) dealt with the issue of continuing professional development for rural health practitioners and found it to be a matter of concern as part of overall education and training. This was particularly so for rural disciplines given the added difficulty that isolation from major services poses. This section looks at continuing professional development for rural paramedics, in order to examine how it serves the needs of paramedics operating under proposed models of practice. Literature specifically concerning rural paramedics and continuing professional development is scarce; however, as with other health care disciplines continuing professional development is in need of further attention. There are some successful examples of continuing education programs, and the process of Case Based Learning is one means of delivery of continuing education programs.

There is evidence that continuing professional development for general paramedic practice seems to be in need of further attention. Continuing professional development, and the resultant skills maintenance have long been recognized as an ongoing problem for paramedic services (Briese 1983: 67-71). In the absence of continuing education, skills deterioration has been shown in airway management, spinal immobilization and intravenous therapy (Zautcke, Lee et al. 1987: 505-512), the ability to perform medical calculations accurately (Hubble, Paschal et al. 2000: 253), treatment with defibrillation (Ornato, McNeill et al. 1984), and care of paediatric patients (Gaffney and Johnson 2001: 82-83). Even when undertaking continuing education modules, paramedics have been shown to deviate from protocols and methods (Salerno, Wrenn et al. 1991: 1322-1323; Walters, D'Auria et al. 1992: 695-696). In Australia, there is question over the currency of some paramedic clinical instructors who are tasked to carry out continuing professional development (Waxman and Williams 2006). One review into education within the Tasmanian Ambulance service found continuing professional development to be lacking or limited, with significant concern about the capacity to deliver skills maintenance to rural paramedics (Eastman 2008: 10).

These issues are somewhat of a concern, as the reverse side is that continuing professional development is a useful part of an education and training continuum. Continuing professional development is useful in paramedic

practice to enhance topics that have proven to be practiced in field but not adequately covered in initial training, or, due to the advancement of medical science have undergone change (Dernocoeur 1998: 57-58; Bray, Martin et al. 2005: 301).

Despite a concern over the delivery of continuing professional development for paramedics, there are some areas of success. These include stroke education (Bray, Martin et al. 2005: 300), understanding of pain principles (French, Salama et al. 2006:73-75), and paediatrics (Glaeser, Linzer et al. 2000: 33; Spaite, Karriker et al. 2000: 178; Miller, Kalinowski et al. 2004: 271). The School of Public Rural Health at Texas A&M University Health Science Centre offers a continuing education program to individuals responsible for emergency planning, preparedness, and response (Quiram, Carpender et al. 2005).

Continuing professional development for paramedics needs to be integral to other levels of education and training and requires thought as to successful delivery. One study from the UK reveals the importance paramedics place on pre-hospital skills such as intubation and defibrillation, but assessment exceeds the emphasis placed on these skills in continuing education programs (Pollock, Brown et al. 1997: 263). Miller et al. (2004) raised a solution in the quest for better continuing professional development and suggested the need

for involvement from various stakeholders, including the public, paramedic providers, and employers (pp. 269-270). Williams (2006) suggested that the Case Based Learning approach used with undergraduate students may well suit continuing professional development, and practical example of this appears in the aforementioned Texan continuing education program. The methods used for The Texas Training Initiative for Emergency Response (T-TIER) included training methodologies such as practical activities, tabletop exercises, and videoconferencing. The approach allowed delivery to multiple agencies, and also for rural participation, with 50% of participants in the T-TIER program being from rural areas (Quiram, Carpender et al. 2005).

Although continuing professional development is a necessary tool in the education and training process for paramedics it is in need of further attention in both rural and urban areas. Rural paramedics in particular are at risk of skills maintenance deterioration without continuing professional development. Despite the concern over the delivery of this important adjunct to education and training, there are some successful examples of continuing education programs, and the process of Case Based Learning is suggested as one means by which continuing education programs might be delivered.

2.7.4 Delivery of education and training for rural paramedics

One way other health care disciplines and rural specialties overcome the barriers of isolation from major services and increase availability of continuing professional development programs is to consider the use of electronic technologies. With Case Based Learning suggested as a means by which paramedic continuing education programs may be influenced, this section considers the delivery of education and training for rural paramedics in light of similar technologies. Further to the electronic approach to education and training delivery is that of practical simulation, and this has particular relevance in rural areas where case exposure may be low.

As a method of delivering education and training to rural areas, the use of electronic media (telemedicine, and telehealth) has been growing in favour. A report presented to the Consensus Conference for Informatics and Technology in Emergency Department Health Care (Orlando, Florida, 2004) suggested that every emergency department should have access to educational materials via the internet, computer based training, and virtual reality simulation (Vozenilek, Huff et al. 2004: 1150). Sheppard and Mackintosh (1998) recognized that a combination of technological advances, videoconference, email, internet, and CD-ROM may be used and further, that it was important to develop an environment that stimulates interactivity and develops information literacy (pp. 189-192). A study by Pullum and Sanddal (1999) noted that four out of five training techniques used for rural pre-

hospital workers made use of distance technology in the forms of videotape, interactive video disk, interactive teleconference, and use of an established statewide electronic infrastructure (pp. 233-237). Further, use of distance technology has successful application in clinical aspects such as neonatal resuscitation training (Cronin, Cheang et al. 2001: 1015-1020).

Australian paramedic education and training is making use of electronic technologies. A program in use by the New South Wales (NSW) ambulance service illustrates the use of such technology in Australia. Using the available intranet, educators designed and moderated discussions. Moderators had to be skilled at keeping the group together, and techniques used to facilitate this were acknowledgement of early contributions, supportive feedback, and fostering discussion with appropriate questions, personal e-mail and welcoming on-line. Some problems of non participation and information overload were suggested. A positive implication of the project was that such technology allowed access to ongoing education, particularly among rural and remote ambulance staff (White, Corbett et al. 2006: 32).

The benefits of such technology in being able to bridge the barrier faced by distance, appear in further Australian examples. One Australian project introduced paramedic students in Montana (USA) and Melbourne (Australia). Face-to-face interaction was conducted in each country and students partook in on line discussion sessions. Students from both countries felt the project

contributed to their cultural diversity development, and increased their awareness of surrounding cultural treatment and management issues (Williams and Upchurch 2006: 574-575). Other examples included podcasting of lectures, and the production of training DVDs (White and Bryant-King 2008; Williams and Bearman 2008).

Telehealth, or the use of electronic media, moves toward addressing the problem of distance in rural areas. However, rural areas with less workload than their urban counterparts also require a means of obtaining practical experience. The use of simulation models has support as a method of training to facilitate education.

The use of simulation technology in training has been in use for many years. Vozenilek, Huff, et al. (2004) state that over the past 30 years virtual reality training using simulators has been effective in several non medical fields such as aviation, the military, business, and nuclear power. Aviation has even claimed a near 50% reduction in crashes related to human error since the 1970s. Simulation scenarios allow students either individually or in groups to practice not only skills, but also communication, organization, and multitasking (p. 1151).

Simulation need not involve great complexity to be effective. Beaubien and Baker (2004) discuss simulation in terms of three components: equipment

fidelity, environment, and psychological. Equipment fidelity is the degree to which the actual equipment used simulates reality, environment involves cues such as visual or other sensory information, and psychological fidelity, the degree to which the trainee perceives the simulation to be believable. It is suggested that of the three, psychological fidelity is perhaps most important. If the trainee is unable to relate the simulation to the real world due to poorly designed scenarios then no amount of complex technology will be able to compensate (pp. 52-53).

There are several examples of attempts to maintain components of fidelity in paramedic education and training. One attempt to maintain psychological fidelity in ambulance practice has been the use of a simulation vehicle for patient extrication in Scotland. This portable simulation is transported between rural and urban areas for the purpose of demonstration and practice of immobilization and extrication of patients involved in motor accidents. (Langran and Carlin 2006: 318-320). Simulation centres are also seeing use in Australia, allowing paramedic students access to simulated patient care environments. Such simulation centres have the potential to benefit not only paramedic students but also, by expanding utilization, other health care disciplines (Boyle, Williams et al. 2007: 854-856).

Whilst simulation centres have potential benefit, some degree of portability for simulation devices needs consideration. One problem identified for rural

health care workers is isolation from major services, hence the Scottish example, which allowed for portability of a simulation situation. Other such portability is in the form of simulation manikins. It has been noted that paramedic students when trained on manikins were as effective as those trained on human subjects (Hall, Plant et al. 2005: 853-854). Training could be achieved in relatively short periods (Owen and Plummer 2002: 640-641), and those trained on human patient simulators had higher post test results than those using case studies (Wyatt, Fallows et al. 2004). The high functional fidelity of such simulators has also been noted by paramedics (Wyatt, Archer et al. 2007).

Care is required however, when interpreting the validity of results from simulation use. The study by Hall, Plant et al (2005) had manikin trained students trained with at least 50 different practical sessions, whereas the human patient trained had 15, thereby gaining less frequency of practice. Results by Owen and Plummer (2002) saw participants successfully trained in intubation in 75-90 minutes, however, they were assessed immediately following training, and human patient intervention was not part of assessment. Wyatt, Fallows et al (2004) point out that their results were only significant for less experienced paramedics.

When considering other health care disciplines and the appearance of rural health care speciality practice, one of the forms of delivering education and

training to rural areas is electronic technology. Similar technology is also in growing favour within paramedic education and training, and paramedics in rural areas are able to take advantage of such development where available. In addition to electronic technology, one further aspect to delivery of education and training for rural paramedics is the use of simulation technology. Simulation need not be complex to be effective, however to reach the rural paramedic, needs a degree of portability in order to overcome the barrier of rural isolation.

2.7.5 Matching education and training to practice

Delivery of education and training to rural paramedics is one aspect of a continuum involving undergraduate, postgraduate, and continuing professional development. In this section, the important process of matching education and training to paramedic practice is considered. Examination of the literature reveals concerns that several authors have in regard to a mismatch between education, training, and practice for paramedics. Some literature suggests means as to how education and training can better match practice. In line with rural models of practice and the specialist nature of other rural health care professions, there are examples in the literature of inter-professional education and training for rural paramedics.

Several international examples appear where paramedic education and training is at odds with paramedic practice. In one of these, using a Delphi

technique Kilner (2004a) investigated desirable attributes of three levels of ambulance practitioner: technician, paramedic and clinical supervisor. These attributes, being similar to the benchmark used by the Quality Assurance Agency for Higher Education, then led to the suggestion that revision of the curriculum used for education and training of ambulance staff was in need of review, to reflect the broader professional base seen in other health care professions (pp. 381-384). Kilner's study observed that whilst some ambulance trusts were making inroads at the local level, overall ambulance education was not. Ambulance trusts exhibited the practice of continuing with curriculum developed several years prior. In the case of the technician it was suggested that curriculum may be 40 years old (p. 382).

Kilner (2004a) found that ambulance staff were being employed, then, put through training in skills and transport, and falling well short of the standards reached through higher education offered to other professions. There was offer of some limited higher education at various institutions within the United Kingdom, though minimal. Those who chose to extend their study to paramedic diploma or degree were in a minority.

In looking at the three separate roles Kilner (2004a) revealed that though the paramedic clinical supervisor had a particular training and supervision role within ambulance services, they in fact held little formal education above the level of technician and paramedic. Implications were drawn regarding the

emerging future roles of paramedic practitioner, in that a danger exists that the curriculum will define the practitioner, rather than the role itself define the curriculum (p. 378).

A similar earlier study by Lendrum, Wilson et al.(2000), also deals with the mismatch between ambulance curriculum and actual work practice. With emphasis placed on life threatening conditions, cardiovascular, and respiratory care, the workload encountered by ambulance personnel was otherwise. Little curriculum time was dedicated to conditions more frequently dealt with, and that were not life threatening (p. 10). In a further example of education, training, and practice mismatch, Cooper (2005) interviewed different ambulance staff from the South West Ambulance Trust in the UK, and revealed that curriculum did not seem to reflect requirements, that education should follow a higher education model rather than a vocational training one, and that education should be separated from operational needs (pp. 377-378).

Interestingly, medical students and tutors also had perceptions of a curriculum and practice mismatch. Although somewhat flawed, in that students and tutors were relying on memory to self report time spent on certain activities, in the study by Bloomfield, Harris et al. (2003) there was an indication that care must be taken in aligning curricular goals with assessment

(pp. 116-117). Bowman (2007) too, indicates that few medical students are prepared for the challenges that await them after formal training.

Revelations of education and training mismatch with paramedic practice are leading to development of a new focus on education and training for paramedics. In an attempt to match curriculum to practice, a multidisciplinary clinical panel comprising representatives from the London Ambulance Service (LAS), local emergency departments, and primary care services was established. Protocols were developed not simply on opinions, but also on literature review, a national survey of ambulance services, individual case comparison over a period of four months, and LAS data on transport rates across the service (Snooks, Kearsley et al. 2004: 436). Garza (1994a) suggested one key to the success of paramedic extended scope schemes in rural areas, is the ability to design a curriculum with the assistance of other health providers in order to determine and fill local health needs (p. 75-76).

Several studies explore multidisciplinary co-operation in education and training development for rural paramedics. An early example was the use of nurses to educate rural United States paramedics in the administration of tuberculosis (TB) examinations, and in TB education for the general community (Garza 1994a: 75-76). Health professionals from other disciplines have also contributed to the development of the 'Practitioner' model in the United Kingdom (Mason, Wardrope et al. 2003; Gregory 2006). The ten-year

experience of the New Mexico Rural Health Interdisciplinary Program demonstrated student centred problem based learning, and it successfully bought together students from differing healthcare professions. Over the period, a consistent change in attitude produced greater confidence to work in rural settings among an inter-professional health care team. Respect was gained toward the role of differing disciplines, and contributions by each discipline resulted in enhanced patient care (Geller, Rhyne et al. 2002).

In light of this inter-professional aspect to education and training there must be consideration of each discipline. Garza's (1994a) report into education of paramedics in the field of TB inoculation and community support stated that the program attracted criticism from nurses, who felt their role was being threatened, and from paramedics worried about having to undertake further education (pp. 75-76).

In ensuring paramedic education and training have alignment with paramedic practice, and consideration of patient care, there are some areas of caution. Firstly, the education and training process needs to be ongoing, and secondly, it must be ensured that paramedics do not practice in isolation of this training process. One of the first expanded scope programs for paramedics appearing in the United States failed because of neglect in these areas. After initial training in some advanced skills such as diagnostic testing, setting of fractures, and family planning there was a failure to provide ongoing support

and clinical supervision for these rural paramedics. With this lack of support, there was little feedback on the appropriateness of care administered and decisions made. There were also several instances of violation of industry standards and state regulations, which may have simply been the product of ignorance and lack of supervision (Hauswald, Raynovich et al. 2005: 252).

Rural models of practice for paramedics demand that education and training for rural paramedics match this practice. There should be effort made to avoid the international examples where paramedic education and training is at odds with paramedic practice. Education and training for rural paramedics needs to consider all available evidence, and part of this for rural paramedics, as with other rural health care professionals, will be an inter-professional component. Importantly, the education and training process needs to be ongoing, in consideration that ultimately paramedics do not practice in isolation of this training process**.**

2.7.6 Summary

This examination of literature concerning education and training for rural paramedics follows the education and training process through the levels of undergraduate, postgraduate and continuing professional development. There is consideration of some techniques by which to deliver education and training to rural paramedics, and the need for education and training to match paramedic practice is an important highlight in paramedic literature.

In the first of the three tiers of education and training, the undergraduate level, there is little literature concerning rurally focused undergraduate paramedic education and training. There has however, been development of paramedic undergraduate education and training in general. This includes the use of a Case Based Learning approach and the use of up to date technologies. Several universities are recognizing a multidisciplinary aspect to health care, offering joint paramedic, and nursing qualifications. In line with the rural clinical placements offered to other health care disciplines, there is also evidence of at least one undergraduate paramedic program that has dedicated rurally focused clinical placements.

Evidence concerning the postgraduate education of rural paramedics is varied. Despite other health professions indicating a need for specific rural education and training, not all literature supports paramedics in rural areas having postgraduate support for an extended skills base. However, specific postgraduate education and training for rural paramedics is appearing both internationally, and in Australia. The 'Practitioner' model in the United Kingdom is one such example, and has both urban and rural application. Australia has seen the development of a postgraduate qualification in remote and rural paramedic practice.

As with other health professions, continuing professional development is in need of further attention in both rural and urban areas. Rural paramedics in particular are at risk of skills maintenance deterioration without continuing professional development. The process of Case Based Learning again appears as one means in the delivery of continuing education programs in isolated rural environments.

Part of education and training in rural areas is the process of delivery in isolated areas. When considering other health care disciplines one of the forms of delivering education and training to rural areas is that of electronic technology. Similar technology appears in paramedic education and training, and finds support in the growing use of simulation technology. Simulation need not be complex to be effective, however to reach rural paramedics needs a degree of portability in order to overcome the barrier of rural isolation.

Finally, and most importantly, the comment is made that design of education and training for rural paramedics in Australia should match paramedic practice. With international examples of a mismatch between paramedic practice, education and training, all available evidence needs consideration in the design of education and training for the rural paramedic.

2.8 Conclusion

Education and training are integral parts of any health care model, and require a strong framework developed upon an equally stable foundation. Much like building a house, the process begins with good planning then proceeds to laying an appropriate, strongly developed foundation. Should the foundation be unsuitable for requirements, or have sections missing, no matter how well the framework above is constructed, inherent instability will always be present.

Rural health needs in Australia are different from those in urban areas, and in order for optimal health care, paramedic practice needs development toward addressing these needs. Unfortunately, there is little current evidence to show that paramedic practice in rural areas is any different from paramedic practice in urban areas.

Models of paramedic practice exist, with some specific to rural areas, such as the recently proposed ‘RESP’ model from Australia (O'Meara, Walker et al. 2006). Models of rural paramedic practice are useful ways by which to categorize the roles of rural paramedics in Australia and have a common theme in that their development is around the needs of rural communities. This gives a strong picture of rural health requirements, however the picture presented is only a snapshot. It requires further consideration as to how rural paramedic practice compares with urban paramedics.

We need to ensure that education and training for Australian rural paramedics reflects their practice. Moving further abroad, and examining the development of paramedic 'Practitioner' models, particularly in the UK, it is apparent there has been a mismatch between what is practiced by paramedics and the curriculum under which they have been educated and trained. To expect a paramedic trained and educated under a curriculum designed for urban practice, to be able to transpose this education and training to the specific requirements of rural practice is the same as expecting foundations meant for bedrock to support a house built on sand.

Groundwork exists toward developing a sound foundation of education and training for rural paramedic practice. Lessons from other health disciplines come from the development of distinct rural health components. There has been an establishment of undergraduate and postgraduate courses specific to rural health, with multidisciplinary approaches and rural placements during training. There is already utilization of training methodologies such as electronic media and undergraduate rural placement by some paramedic institutions to help facilitate rurally themed education and training.

With the development of models of practice for rural paramedics, and in consideration of the direction other health professionals are taking in the rural community, it is possible to hypothesize that rural paramedics operate within

an environment of distinct characteristics, requiring education and training with rural components. There is however a gap in the literature when attempting to compare rural paramedic practice with urban paramedic practice. Further to this is the absence of any exploration of features that may be generic to different rural models of paramedic practice. The identification of a rural speciality will require an investigative focus on these gaps, building evidence toward the need for paramedic education and training with rural components.

As suggested by Kilner (Kilner 2004a) the danger of curriculum defining the future roles of the paramedic should be avoided, rather, the role itself should define the curriculum.

Chapter 3
Methodology

3.1 Overview

The previous chapter revealed gaps in the literature when comparing the practice of rural paramedics to urban paramedics in Australia. This chapter explains the methodology used in order to address these gaps. I have adopted a comparative case study for this research project. Principally the case study design follows the format as suggested by Yin (2003: 1) where the investigator has no control over the contemporary events examined and "how" and "why' questions raised by the research. The case study format allows for a primary exploratory comparison of rural and urban paramedics.

The components of this study were:

- Comprehensive review and analysis of relevant literature
- Case studies of rural and urban paramedic roles

This comparative case study used three cases from two Australian states, Tasmania and Victoria. The cases represented two rural and one urban model. The urban case represented a traditional model where intensive care paramedics worked with other ambulance professionals. Of the two rural

cases, one represented the ‘Sufficing’ model where intensive care paramedics worked alongside volunteers and the other represented the ‘RESP’ model, which saw innovative paramedic practice in local communities. Units of analysis within each case consisted of various paramedic locations (Figure 3.1).

This use of multiple cases allowed investigation for any similarities and differences of data across and within cases. Similarities of data within the units of analysis for the urban model, and again the two rural models offered what Yin (2003: 47) refers to as a literal replication of data. With the security that data were consistent within each model, contrasts across cases were then used to offer support for the proposed theory (theoretical replication) (Yin 2003: 47).

The use of a case study approach allowed for units of analysis used in each case study to include data other than field interviews. Interview data appear in conjunction with case audit information, demographic details, observation of paramedics in their own environment, relevant websites, as any relevant documentation. This triangulation of data increased rigor of research results.

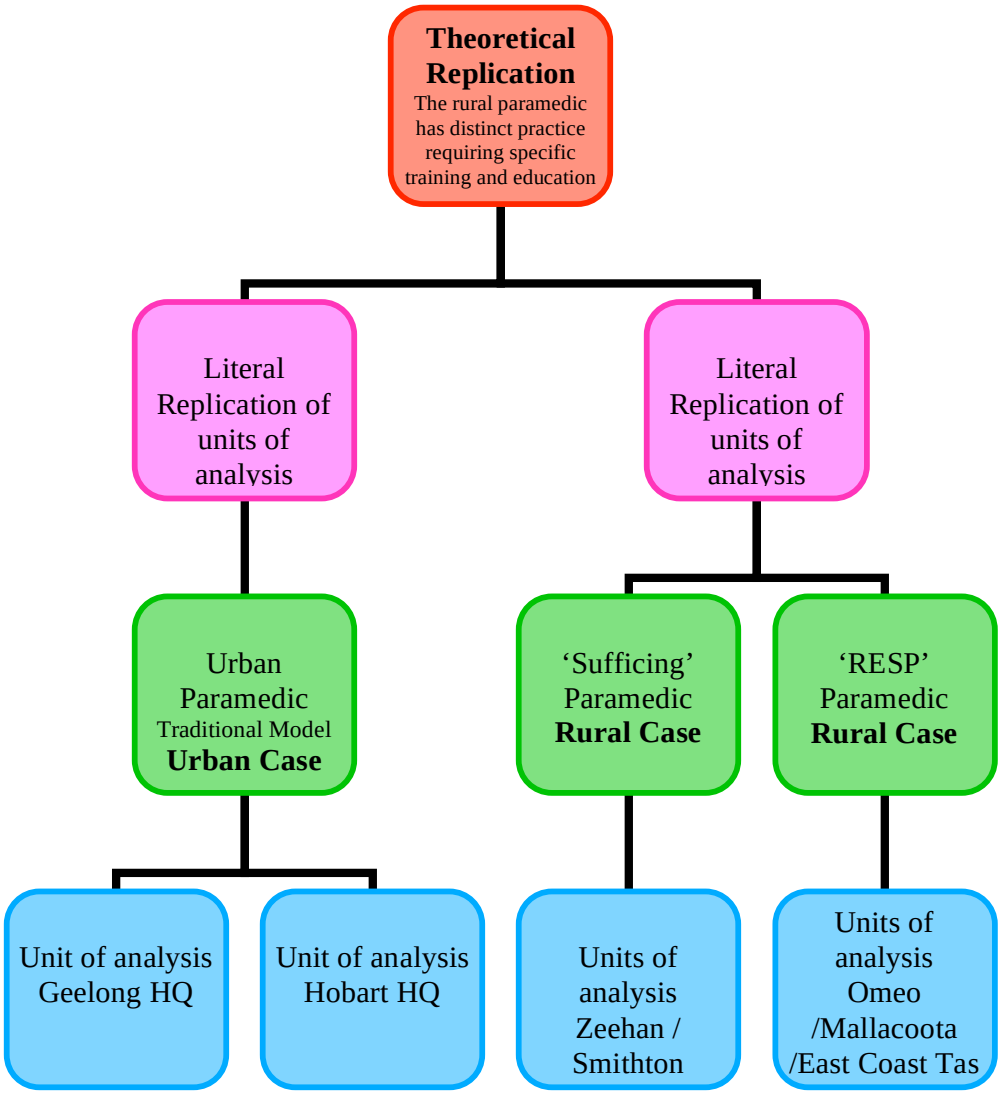

Figure 3.1: Case Study Outline

3.2 The research questions

The small body of research emerging from Australia regarding the work of rural paramedics suggests several descriptive models of practice. These

models involve not only emergency response, but extended scope of practice, primary health care and rural community engagement (O'Meara, Burley et al. 2002; O'Meara and Strasser 2002; O'Meara 2002; O'Meara 2003; O'Meara 2003; O'Meara, Kendall et al. 2004; O'Meara, Walker et al. 2006; Raven, Tippett et al. 2006; Raven, Tippet et al. 2007).

With this literature in mind, and with recent innovations such as the graduate certificate in rural and remote paramedical practice at James Cook University in Queensland (James Cook University 2007), the purpose of this research was to compare rural paramedic practice with urban paramedic practice in order to establish whether rural paramedics are practicing distinct roles necessitating specifically directed education and training.

The research questions supporting this purpose recognized the gap in the literature comparing rural paramedic practice with urban paramedic practice. This particular Masters study asked two research questions:

1. How does the practice of rural paramedics compare with that of urban paramedics?
2. How does the practice of rural paramedics compare across different local approaches?

3.3 Ethics approval

This study has Social Sciences minimal risk ethics approval granted through the University of Tasmania Human Research Ethics Committee (Tasmania) Network (Appendix A).

Information gathered via the Metropolitan Ambulance Service (MAS) in Melbourne, Victoria, required separate ethics approval from the Strategic Planning Department of MAS (Appendix B).

An important ethical consideration in the research process was the confidentiality of paramedic data at all times and in consideration of this procedures included:

- Distribution of information statements (Appendix E) and consent forms (Appendix F) to all participants
- Reassurance as to the voluntary nature of the study, and the right to withdraw at any time
- No reporting of embarrassing or compromising incidents
- Assurance that ambulance managers would not have access to interview data
- Because of an education and training focus, assurance that paramedic interviews were in no way an examination of any one individual's current knowledge and practical skills.

3.4 Case study strategy

This section describes the case study methodology used to compare rural paramedic practice with urban paramedic practice. By explaining the rationale for selecting a case study methodology, I offer reinforcement for the suitability of a case study strategy. I then present the approach used in data collection in order to offer a comparison of rural paramedic practice and urban paramedic practice. The first consideration is that of sample collection, and I explain the purposeful selection used in determining units of analysis. Following this are the other approaches used, and these are field visits, interviews, audit of case dispatch data, and documentation. Finally, I explain the principles of analysis used in the case study methodology.

3.4.1 Rationale

An explorative study into the differences between rural paramedic practice and urban paramedic practice does not necessarily have to be in the form of a case study; however, the purpose of this research was to compare rural and urban paramedics on multiple levels, and case study methodology is well suited to a comparative study. This type of comparison is referred to as a 'collective' case study, the purpose of which is to investigate a particular phenomenon (Stake 2000: 437) , or to provide description (Eisenhart 2002:

9), in this case of the differences and similarities between rural and urban paramedic practice. It is here questions asking ‘how’ and/or ‘why’ are important. Yin (2003) suggests that it is the type of how and/or why questioning, with no requirement for experimental control and a focus on contemporary events which is well suited to a case study strategy (Yin 2003: 5-7).

Part of a case study methodology can be the use of multiple cases, and Eisenhart (2002) suggests that a multiple case study increases reliability in terms of forcing the researcher to go beyond initial impressions and improve the likelihood of accurate and reliable theory (p. 19). I did not wish to limit data collection to one specific site in rural Tasmania, or Urban Victoria. The use of multiple cases allowed for a cross case synthesis, a technique whereby each individual case is treated as a separate study (Yin 2003: 133-137). Eisenhart (2002) explains an advantage of cross case synthesis in being the ability to minimise bias caused by jumping to conclusions based on limited data, being influenced by vividness of particular data, or the dropping of disconfirming evidence (p. 18).

Multiple cases also allowed for some generalization of results beyond the immediate project, a characteristic one would have to approach with trepidation if adopting a study of a single subject such as with a biographical approach. In examining multiple cases, the researcher is looking for similar

results within each case (literal replication), or contrasting results between cases for predictable reasons (theoretical replication). This application of replication logic within and across cases further strengthens the propositional standpoint of the project (Huberman and Miles 2002: 17-24; Yin 2003: 47-52). This Masters project examined literal replication of results by comparing units of analysis for each case, and theoretical replication by comparing rural and urban cases for contrasting results, in order to confirm the proposition that the rural paramedic has distinct practice requiring specific education and training (Figure 3.1).

Case study methodology allows for various ways for reporting of results and this research project adopts the 'comparative' approach as suggested by Yin (2003). The comparative structure in reporting of results is one in which the same case is not dealt with as a single entity before moving onto the next but presented numerous times throughout the work (p. 153). Results are reported as themes, and this is a process well suited to the writing of qualitative research. An illustration of such appears in Hansen (2006), where Sayre's (2000) research project adopted a similar approach in presenting themes of 'problem', 'disease', 'crisis', 'punishment', and ' violation' when presenting how patients explain mental illness (p. 171).

The use of themes provides a continuing narrative in answering the research questions and presenting relevant discussion. Koch (1998) suggests that

argument is credible when presenting faithful descriptions, and transferable when there is a degree of similarity between concepts (p. 1188). In this study, use of quotes from paramedics interspersed with other data sources, provided a faithful representation of data and credible evidence for the themes that emerged from the data.

3.4.2 Triangulation of data

Triangulation is a process that involves observation of research from at least two differing points (Flick 2004: 178). This triangulation of qualitative data as part of case study methodology allowed for increased rigor of the research by using these different perspectives to create a more complete and comprehensive picture of what is being studied (Creswell 1998; Yin 2003: 97-99; Hansen 2006: 54-56).

The process of triangulation of data involves the examination of various forms of data sources. In qualitative research, these data sources may be from different times, events, situations, places, and people (Thurmond 2001: 254; Flick 2004:178). In this present study, the case study strategy allowed for more than one method of data gathering. As well as interviews with paramedics other sources of data included case audits, review of documentation, including job descriptions, ambulance service and union websites, archival information, local media, university curricula, and

observation of paramedics within their local environment looking at key processes and events.

3.4.3 Limitations

Case study methodology is not without limitations, and the main one presented by this research project is that it was far beyond the scope of this study to offer a comparison of all rural and urban paramedics in Australia. Data triangulation as used in this case study strategy can lead to the presentation of large amounts of data and the possibility of false interpretation (Thurmond 2001: 256), and so purposeful selection of cases was required in order to make the data manageable. Although some degree of generalization of results is possible, an important understanding is that data are case specific.

To aid selection of cases, models of paramedic practice are used; however, limitations to this study come with this use of models of paramedic practice. Although the models of ‘Sufficing’ and ‘RESP’ have undergone a peer-review process (O'Meara 2002; O'Meara, Walker et al. 2006), they serve as descriptions of paramedic practice. In this study, I classed certain sites as belonging to a model if they contained all of the key features of that model.

In addition to selection of two rural models, I also used a classification scale in order to help define what is rural and what is urban. This study made use of the seven point Rural, Remote and Metropolitan Area classification (RRMA) and all units of analysis selected for each rural model fell into the R3 RRMA classification. The reader however, needs to be aware that RRMA uses straight-line measurements from urban centres to determine rurality or remoteness. A limitation of the RRMA is that in reality, areas may be more isolated than indicated due to actual travel time or road conditions (Australian Institute of Health and Welfare 2004).

Aligning metropolitan areas in Tasmania and Victoria using rural classification scales presented further limitation. As well as RRMA, of common use in Australia are the Accessibility / Remoteness Index for Australia (ARIA), and ARIA+ methodology, which serves as a basis for Australian Standard Geographical Classification (ASGC). The ASGC uses a different island weighting factor for Tasmania, and is also based on distances to five categories of service centre rather than the four as with ARIA (Australian Institute of Health and Welfare 2004). When conducting a comparative study of rural and urban paramedics using Tasmania and Victoria, given the specific weighting for Tasmania, it would seem desirable to select ARIA+ or ASGC. A conundrum however develops in that the capital city Hobart becomes classified as Inner Regional (IR) where as a cities such as Melbourne or Geelong in Victoria are classified as Major Cities (MC)

(Australian Institute of Health and Welfare 2004). On the other hand, RRMA classification of Hobart and Melbourne has both as capital cities and Geelong as an 'other' metropolitan centre (M2) (Australian Institute of Health and Welfare 2004). I chose to use Hobart and Geelong in this study based on approximation to each other in terms of medical services, populations, and paramedic crew mix, rather than current classification methods.

One further limitation of the case study methodology used relates to generalization of results due to possible misrepresentation or misinterpretation. The use of a narrative and thematic type of presentation can produce generalization as part of an unconscious process for both the researcher and reader. It is possible for a researcher to pass onto readers some personal meanings of events, in the same respect, the reader may reconstruct information different to what is intended (Stake 2000: 442-443).

Triangulation of data can reduce the effects of unconscious generalization by presenting a more comprehensive examination of the topic under investigation; however, data triangulation is not without limitation itself. A singular form of triangulation is not a total method of validation. Other forms of triangulation exist and these include; investigator triangulation with the use of different investigators, methodological triangulation or mixed methodology, and theoretical triangulation where results are tested against opposing hypotheses or theoretical frameworks (Thurmond 2001: 256-257;

Flick 2004: 178-181). This study was limited to triangulation of data gathered between the years 2004-2008, including interviews conducted with intensive care paramedics from the Australian states of Tasmania and Victoria.

3.4.4 Sample Selection

Development of my research was with specific cases purposefully selected from both rural and urban areas in Australia. Case sites in Tasmania and Victoria were chosen because the two states have common historical roots. This eventuates due to a close alliance when initial paramedic courses were established, and the current decision of the Tasmanian Ambulance Service to adopt Clinical Practice Guidelines based on those of Rural Ambulance Victoria (Rural Ambulance Victoria 2007).

Despite this close alliance, rural cases in particular were difficult to select for comparison because the rural paramedic workplace varies between locations. Within both Tasmania and Victoria, a paramedic in a rural area may work as a solo practitioner, as an adjunct to volunteer units, work full time with a volunteer crew, or work full time with another paramedic.

Descriptive models of rural paramedic practice were used as a means for selection of rural cases for this project. The body of work that addresses models of ambulance practice, and in particular rural ambulance practice (Neely, Drake et al. 1997; O'Meara, Burley et al. 2002; O'Meara 2002;

Everden, Eardley et al. 2003; O'Meara 2003; Cooper, Barrett et al. 2004; O'Meara, Kendall et al. 2004; Adams, Wright et al. 2005; O'Meara, Walker et al. 2006; Raven, Tippett et al. 2006; Raven, Tippet et al. 2007), offered a solution to differences in the workplace of rural paramedics. Two of these models are the 'Sufficing', suggested as closely resembling traditional ambulance operations in Australia (O'Meara 2002: 278-288), and the 'RESP' model (Rural community engagement, Emergency response, Scope of practice extension, Primary health care) (O'Meara, Walker et al. 2006). It is these two models that formed the basis for selection of rural cases.

Because of a possibility that some rural areas may only have one paramedic available for interview, the case study design allowed for use of several units of analysis within each case study (Figure 3.1). Two units for analysis were chosen for the 'Sufficing' model paramedics, and these were Zeehan and Smithton in Tasmania. Units of analysis for the 'RESP' model included the East Coast of Tasmania, Omeo, and Mallacoota in Victoria. These areas appear in the report to the Council of Ambulance Authorities from which the 'RESP' model emerged (O'Meara, Walker et al. 2006).

Selection of units of analysis for the urban paramedic presented two problems. Firstly, within Victorian urban areas a two-tiered system of paramedic response exists with some ambulance crews consisting entirely of intensive care paramedics where as other response is by non intensive care

paramedics. In other areas, a mixture of crewing occurs, this being similar to that used in urban Tasmania.

Secondly, selection of units of analysis based on each capital city would introduce inaccuracies. Hobart, with a population of just over 200,000 and access to only one major public hospital is very different to Melbourne with a population of over 3.5 million (Australian Bureau of Statistics 2007). Paramedics in central Melbourne alone have access to several public hospitals, whereas in Hobart there is only one major public emergency hospital.

Purposeful selection of urban units of analysis offered a solution to these problems. The cities of Hobart in Tasmania and Geelong in Victoria are very similar in size, and have similar hospital situations. Additionally, both have paramedics with similar crewing arrangements and qualification. Therefore, this study used both Hobart and Geelong.

3.4.5 Field visits and interviews

An integral part of my research was the process of field visits and interviews, an important step in order to answer research questions relating to paramedic practice, education, and training. Taking place during 2006-2007 this involved interviews with 10 intensive care paramedics and observation of the general environment in which these paramedics worked.

Recruitment of intensive care paramedics for interviews took place in several stages:

- Letters of permission to ambulance services to conduct research (Appendix C)
- Letters of permission to ambulance area managers to distribute information statements to relevant areas (Appendix D)
- Distribution of information statements (Appendix E)
- Interested intensive care paramedics contacted the researcher indicating their interest
- Distribution of consent forms to interested intensive care paramedics (Appendix F).

There were replies from 13 interested intensive care paramedics following the initial distribution of information statements. Of these one decided to withdraw prior to interview, one had heard about the study but was not from the case sites selected, and the third was a new appointment to the role and had not actually taken up position. Paramedics were evenly distributed with two from each urban area, three from the 'Sufficing' model, and three from the 'RESP' model. Eight interviews were conducted face to face and two by telephone. All interviews were tape recorded with permission of each

intensive care paramedic, and transcribed verbatim by the author within 48 hours.

All paramedics were offered the opportunity to verify transcripts, however all declined. Whilst it is preferable to have respondents validate transcripts due to possible alteration of viewpoints over time, or possible disagreement with interpretation and presentation (Hansen 2006: 56-58; Gibbs 2007: 95), the decision to decline verification of transcripts was accompanied by a verbal acceptance that what was said during interviews was correct. All paramedics signed consent forms prior to interview, and no consents were rescinded. Analysis of transcripts was aided by the *NVivo8*™ (QSR International Pty Ltd. 2008) software package.

Designing the format of semi structured interviews (Appendix G), involved findings from a comprehensive literature review and reflected the research questions. For example, where the literature review mentioned paramedic education at the levels of undergraduate, postgraduate, and continuing, so too did one of the interview questions. Interview questions had themes of the work practices, education and training of paramedics. The semi-structured nature of interviews, encouraged paramedics to contribute relevant thoughts to their own area of practice and themes relating to the research questions emerged. Without exception, intensive care paramedics interviewed contributed rich data offering insight to their work practices, education and

training, and although with a minimum time of 20 minutes for each interview, most continued discourse for over 60 minutes.

Following the analysis of transcripts from the initial cohort of paramedics, there was consistency in data between urban paramedics and between rural paramedics. Determination of this consistency in data was by constant comparison of each interview and the revealing of emergent themes. This resulted in a literal replication of results and was supported by observational data, documentation, and dispatch data in respective areas. With occurrence of this literal replication, it was not necessary to extend interview numbers beyond the initial interested paramedics.

Face to face interviews in the workplace allowed observation of the environment in which each intensive care paramedic worked, this included the workplace of the paramedic, local hospitals, local townships and surrounds. Where telephone interviews were conducted observational visits to respective areas occurred at a later stage. This study did not include interviews with other health professionals, community members, or ambulance managers. Expansion of the approach will be useful for further study, especially given some paramedic responses regarding the involvement with other people.

The case studies appearing in this project developed from the perspectives of intensive care paramedics. This intensive care paramedic perspective, gleaned from interviews and field visits, was vital in order to answer research questions relating to a comparison of rural paramedic practice and urban paramedic practice, and the education and training required.

3.4.6 Audit of case dispatch data

A feature of case study methodology is balance and variety in order to provide a completeness and enrichment to the events being studied (Koch 1998: 1186; Stake 2000: 447; Hansen 2006: 56). In order for a complete picture of the work of paramedics in rural and urban areas, an audit of the types of cases paramedics are dispatched to was appropriate.

At the time of data collection, only the Tasmanian Ambulance Service had electronic records in both rural and urban areas to enable identification of dispatch data by the type of problem. Rural Ambulance Victoria (RAV), which recorded dispatch data for the Victorian sites in this study, utilized a method in which data appeared by level of urgency rather than type of case. Because of this difficulty in obtaining data from RAV, Tasmanian data appears in this research and is matched with data from Victorian Metropolitan Ambulance Service (Appendices K, L, M, N).

Access to dispatch data in Tasmania was via a computer aided dispatch system, which maintained the nature of each ambulance response. These data were very rich in that each dispatch appeared by name, for example, chest pain, or trauma. Data presented in this study appear according to themes. The theme ‘cardiac’ for example includes dispatch data such as ‘chest pain’, ‘cardiac’, ‘cardiac arrest’, ‘angina’, ‘arrhythmia’, and ‘myocardial infarction’. Despite having a record of each response there was no electronic sorting of cases by type or individual station, only by one of three Tasmanian regions. To assess dispatch response for each individual area required manual sorting. As an example, one year of data for Southern Region in Tasmania included over 30,000 entries for sorting.

As part of the case audit, dispatch data from the Metropolitan Ambulance Service (MAS) (Now Ambulance Victoria) Melbourne, were included (Appendix N). Use of this dispatch data served to help verify urban Tasmanian data. MAS paramedics used a computerized case entry method known as Victorian Ambulance Clinical Information System (VACIS) (Metropolitan Ambulance Service Melbourne 2009), what this meant was that recall of dispatch data did not require manual sorting or counting of events. Further to this, it was possible to search data using a variety of terms. Where sorting data by individual area was labour intensive in Tasmania, this was not so in MAS.

Data gathering took place over the years 2005 and 2006. In both Tasmanian and Victorian data, examination was of entire populations relevant to each area. Once sorted, analysis of data was with SPSS™ 14.0 (SPSS Inc. 2005), and presentation takes the form of a description of the frequency of the types of cases.

A limitation of this case audit was the use of only dispatch data rather than what paramedics found when they arrived at a scene, or what interventions were carried out. This was because at the time of data gathering these particular data were readily available. Further research will benefit in examination of what rural and urban paramedics find on arrival at a scene, and what interventions they carry out.

At the time of writing, both Tasmania and Rural Ambulance Victoria had adopted the VACIS case entry format. However, search functions remained restricted, and a mixture of computerized and traditional data entry still existed. Introduction and development of such systems across ambulance services will reduce the difficulties encountered in gathering of research data.

3.4.7 Documentation

While paramedic interviews provided a rich source of information, additional documentation enabled further triangulation of data.

- *Archival information* – Both ambulance services involved in this study allowed access to available archives relevant to the units of analysis. These archives included memoranda and letters from when paramedic services were established in some areas, non confidential correspondence between paramedics and management, and data concerning cases attended.
- *Position descriptions* – Paramedic position descriptions allowed for examination of the formal paramedic work duties in each relevant area.
- *Ambulance service websites*- Rural ambulance Victoria (Now Ambulance Victoria) have a website (Rural Ambulance Victoria 2008a), which contains a large amount of information regarding current guidelines and procedures, service structure and community programs. The Tasmanian Ambulance Service has no such comparable public access website, however some information is available via the Tasmanian Ambulance Volunteer website (Tasmanian Ambulance Volunteers 2008). The Tasmanian Department of Health and Human Services (DHHS) intranet site provides Tasmanian Ambulance guidelines, policies and procedures.
- *Ambulance Union Websites* – Ambulance service union websites (Health and Community Services Union (HACSU) 2008; Liquor Hospitality and Miscellaneous Union (LHMU) 2008) were a rich source of information concerning current and previous developments in ambulance practice within Tasmania and Victoria. The author was also a member of an online *Google Groups* ambulance forum run by the Tasmanian Health and

Community Services Union (HACSU). Participation in this forum was in an observation capacity only so as not to influence any discussion that may have eventuated regarding the topic of this study.

- *Local Media* – In some rural cases, paramedics themselves pointed out local media articles of interest to the work they carry out. Some local media was also available online using a Google search engine with the locality and ambulance or paramedic as keywords. Ambulance Union Websites were also a reference for media articles.
- *Universities* – The University of Tasmania, Monash University in Victoria, and Victoria University are the major contributors to current paramedic qualifications in the states relevant to this case study. Information on curricula is available via each university website (University of Tasmania 2008; Victoria University 2008; Monash University 2008a; Monash University 2008b).

3.4.8 Principles of analysis

The analytic strategy and techniques adopted in the case studies are founded on four principles of social science research as suggested by Yin (2003: 137). These principles are:

- *attending to all the evidence,*
- *addressing all major rival interpretations,*
- *addressing the most significant aspect of the case study, and*

- *use of own prior expert knowledge.*

In *attending to all the evidence,* the first step, based on a comprehensive literature review, was the formulation of a purpose to explore whether rural paramedics are practicing distinct roles necessitating education and training with specific rural components.

Next, themes were identified from each case study[1]. The corresponding process of thematic analysis (Hansen 2006: 139) involved the transcribing of interviews from taped recordings into the *NVivo8*™(QSR International Pty Ltd. 2008) statistical software package. Continued review of transcriptions involved comparisons of data to look explicitly for similarities, differences, and variations in activities, and revealed several recurrent themes, some with sub themes. This appearance of sub themes was considered a normal event whereby a hierarchy appears with a 'parent' theme having several 'children' themes (Gibbs 2007: 88). For example, a theme of *work nature* had as sub themes; *emergency response, hospitals, mental health, nursing, public education, and transport.* Within and cross case analysis then took place using these general themes, which were then sorted into key themes from which thematic comparisons could be established.

[1]For consistency the terminology 'themes' is used in this present study. In qualitative research, terminology such as 'codes' or 'categories' may also be used (Gibbs 2007: 39)

Thematic identification was an important part of the analytical process and ensured consideration of all evidence. For example, what appeared initially as a minor theme was that of response to mental health care. Further analysis revealed this theme as one unique to urban paramedics. This then led to investigation of possibilities as to why this theme did not occur in rural data, with one explanation being the strong community and multidisciplinary ties appearing more frequently in rural data.

The use of several units of analysis purposefully selected for each case study was a further factor in *attending to all the evidence*. This allowed for data collection beyond interviews alone. This triangulation of data contributed to the robustness of the research. Where triangulation also assisted was in the second principle of social science, that of *addressing all major rival interpretations* (Yin 2003: 137). The major rival interpretations to the present study are that there are no differences between rural and urban paramedics, and that no specific components are required for rural paramedic education and training.

Triangulation of data within each case study allowed for reliable literal replication of data. Literal replication being the prediction of similar results from all data sources for a given case (Yin 2003: 47). Should this literal replication not occur then rival interpretations would require presentation. For example, conflicting data from each of the 'RESP' model paramedics may

have indicated inconsistencies within the model itself. This would have necessitated a return to the field to increase sample size, gain further evidence and rule out possible rogue results.

In addition to the possibility of an absence of literal replication of data and the presentation of rival interpretations, the multiple case study approach allowed for analysis at two levels. At the second level of analysis, theoretical replication (Yin 2003: 47), where cross case analysis identified support for the concept that rural paramedic practice is different to urban paramedic practice, rival interpretations may also have presented. For example, if themes between rural cases and the urban case were similar then it would be difficult to support the concept that rural paramedics operate in an environment of distinct practice, requiring education and training with specific rural components. Similarly, if each rural case differed, then an alternative interpretation would emerge, being that not only are rural and urban paramedics different but that paramedics from different rural models will also have different distinct characteristics.

The third principle of analysis put forward by Yin (2003: 137) is that *the most significant aspect be addressed.* The *most significant aspect* of my study lies in the overarching proposal that rural paramedic roles differ to those of urban paramedics.

I chose a multiple case study approach in order to address this major aspect. Each case emerged as a separate study, each with data compared by a process of thematic analysis, as well as literal and theoretical replication of data. In order for a reliable comparative study of rural paramedic practice and urban paramedic practice, each case also utilized not one but several units of analysis (Figure 3.1).

The fourth principle of analysis proposed by Yin is that of the *use of own prior expert knowledge* (Yin 2003: 137). An important part of this study has been my own experience as an intensive care paramedic and paramedic educator in both urban and rural areas. This *use of own prior expert knowledge* has enabled a close understanding of data and allowed for an enhanced understanding and observation of what paramedics were saying.

Transcribing all interview data further enhanced this understanding of data. Transcription of interviews occurred within 48 hours, and I used this transcription process to immerse in data and corresponding analysis.

The *use of own prior expert knowledge* is one of the four principles of social science research as suggested by Yin (2003: 137), the others being; *attending to all the evidence, addressing all major rival interpretations, and addressing the most significant aspect of the case study.* In adhering to these principles, I reduced the impact of any boundaries placed on the study, such

as limited numbers of rural and urban sites, by purposeful selection of cases and their units of analysis. By doing so, this research offers a reliable perspective on a comparison between rural paramedic practice and urban paramedic practice.

3.5 Summary

Use of a case study methodology provided a useful means for comparing rural paramedic practice to urban paramedic practice. This comprehensive approach addressed the main purpose of this study, to compare rural paramedic practice with urban paramedic practice in order to establish whether rural paramedics are practicing distinct roles necessitating specifically directed education and training.

The case study strategy had no need for experimental control, and the focus was on contemporary events. The methodology allowed for examination of several cases, which was an ideal approach for a comparative study. Not only did the method allow comparison of urban and rural paramedics, but also individual models of rural paramedic practice.

In the case study approach, two rural cases and one urban case were examined using units of analysis from both Victoria and Tasmania. These were compared both across and within cases and data gathered included interviews with ten intensive care paramedics, an audit of case dispatch data,

as well as review of documentation, including job descriptions, ambulance service and union websites, archival information, local media, university curricula, and observation of paramedics within their local environment looking at key processes and events. This allowed for triangulation of data, serving to increase robustness of results.

By comparing case study data across and within cases, a comparison of rural and urban paramedic practice was achieved. In the following chapter, an overview of the cases used in the case study strategy is given; this is followed by discussion of results, painting a comprehensive picture of rural and urban paramedic practice.

Chapter 4
Case Study Overview

4.1 Introduction

This chapter outlines the three case studies used in this study, including relevant demographic detail. It serves as an introduction to the rural and urban case data and discussion presented in the following chapters.

The three case studies (one urban and two rural) each with several units of analysis were selected from the Australian states of Tasmania and Victoria. Rationale for the selection of cases appears in section *3.4.4 Sample Selection* and follows descriptive models of paramedic practice. The urban case represents a traditional model where intensive care paramedics work with other ambulance professionals. Of the two rural cases, one represents the 'Sufficing' model where intensive care paramedics work alongside volunteers and the other represents the 'RESP' model, in which differing innovations are brought to paramedic practice in local communities.

4.2 Urban Case

In order to ensure consistency across urban cases, it was important that urban units of analysis match the model of intensive care practice where each intensive care paramedic works with another ambulance professional. This other professional may not necessarily be another intensive care paramedic and can vary in qualification, including paramedic students. Units of analysis also required close alignment in terms of population, medical and other services available. The two units of analysis used in the urban case study are intensive care paramedic activity in the urban areas of Hobart in Tasmania and Geelong in Victoria. Both urban areas have similar populations and similar demographics as illustrated in Figure 4.1.

The Geelong area sees staffing distribution at surrounding ambulance stations in Norlane, Bemont, Bellarine, Ocean Grove, Torquay, Anglesea, and Lorne. Hobart includes ambulance stations in the surrounding areas of Mornington, Sorell, Kingston, Bridgewater, Glenorchy, New Norfolk and Huonville.

At the time of writing state government investment in both Hobart and Geelong had resulted in extra staffing and establishment of new stations. In Geelong, the 2008 Victorian State Budget included allocation for a new ambulance station at Anglesea, and additional paramedics to the Geelong area (Victorian State Government 2008), while in Tasmania, the State

Government in the 2008 budget pledged $5million to assist ambulance statewide (Giddings 2008).

	Geelong	Hobart
Population		
Male	98,973	98,740
Female	103,243	103,442
Total	202,216	202,182
Population density		
Persons/km2	162.5	148.9
Births and Deaths		
Births year ended 31 December	2,358	2,450
Deaths year ended 31 December	1,542	1,647
Unemployment		
Number	7,346	6,125
Average individual taxable income		
Year ended 30 June 2003 ($)	38,182	37,133

Figure 4.1: Selected demographic statistics for Greater Geelong and Greater Hobart (2004)
Source:(Australian Bureau of Statistics 2007[accessed 17th August 2007], available online at: http://www.censusdata.abs.gov.au)

General information regarding the demographic details of paramedics at Geelong and Hobart, and the numbers of cases attended for the year 2006 is

presented in Figure 4.2. Due to methods of data collection in both Rural Ambulance Victoria and the Tasmanian Ambulance service at the time of writing, it was difficult to separate ambulance cases attended by intensive care paramedics from those attended by other levels of staff.

The types of cases that paramedics were dispatched to in urban Tasmania for the same period are mentioned in Appendix M, and the most common types of case were cardiac, breathing problems, falls, inter-hospital transfers, abdominal pain, and conditions that were unknown at the time of dispatch. Unfortunately at the time of data gathering only Tasmanian urban data were available by case type.

Paramedic services from both urban areas in this study are state government run, and at the time of research, Geelong was under administration of Rural Ambulance Victoria. The 2008 state budget saw the Victorian State Government announce the merging of Rural Ambulance Victoria with the Metropolitan Ambulance Service under the banner of Ambulance Victoria (Victorian State Government 2008).

As government services, both urban paramedic case sites offer transport to local public hospitals, in Geelong this is the Geelong Hospital (Barwon Health) and in Hobart, the Royal Hobart Hospital (Department of Health and Human Services). A number of private facilities are also available but all

non-arranged pre-hospital transport is to these two public health care facilities (Appendix H).

	Hobart	Geelong	Notes
Cases Attended (no.)	31,174	23,933	1. Geelong data includes surrounding 24-hour stations at Norlane, Belmont, Bellarine, Ocean Grove, Torquay 2. Hobart data is for Southern Region Tasmania, numbers Include some outer stations
Staff Numbers			
Male	44	33	
Female	22	11	
Total	66	44	
Average Age	40.1	38.4	
Intensive Care Paramedics	24	20	

Figure 4.2: Paramedic information for Hobart and Geelong (2006)
Sources: Tasmanian Ambulance Service, Rural Ambulance Victoria (now Ambulance Victoria)

4.3 Rural Case - 'Sufficing' model

The first rural case study incorporates the intensive care paramedic working as a team member with a volunteer and has units of analysis chosen from areas from the west coast of Tasmania. This includes intensive care paramedics working at ambulance stations situated at Zeehan on the central coast, and Smithton in the North.

The rural areas served by these paramedics varies from the coastal townships of Smithton, and Strahan, to those with heavy mining industry such as Queenstown, and Roseberry. Other industry includes farming and forestry. Some demographic data for each appear in Figure 4.3, and the west coast area of Tasmania has an RRMA classification of R3 which refers to an *other rural area (population < 10000)* (Australian Institute of Health and Welfare 2004).

Both ambulance stations have intensive care paramedics at most times, however sometimes due to staffing shortages non intensive care paramedics will also work from these areas. Zeehan and Smithton have groups of volunteers dedicated to each station and the paramedic on duty works both as a crewmember and is responsible for maintenance of volunteer training. In addition, the Tasmanian Ambulance Service also has Volunteer Educators who oversee local volunteer training. Ambulance volunteers are also located at Queenstown and Strahan to the south and Roseberry to the north. The Zeehan paramedic has input to volunteer training in all these areas.

Two paramedics work a roster system of four days on and four days off. Each of the four days on is associated with being on call so in effect paramedic response is 24 hours a day seven days per week. Volunteers work to an arranged roster system on a call out basis. Volunteers in Tasmania are not paid but do have uniform supplied.

At the time of writing, ambulance volunteers in Queenstown consisted mainly of staff from the hospital who had an interest in pre-hospital care, however the 2008 Tasmanian state budget made mention of a paramedic position being made available at Queenstown (Giddings 2008).

The numbers of cases attended by paramedics on the west coast included 505 attended in 2005 by the Zeehan paramedic and 667 in 2006, or approximately 225 cases per 1000 persons (Queenstown and Zeehan). The Smithton paramedics attended 512 cases in 2006 or approximately 152 cases per 1000 persons (Source: Tasmanian computer aided dispatch system). Although caseload may be small, large distances and additional response by air when necessary are factors to consider.

The types of cases paramedics were dispatched to in 2006 on the west coast of Tasmania are mentioned in Appendix K, with the most common being

inter-hospital transfers, cardiac, breathing problems, unknown events, and falls.

	Queenstown	Zeehan	Smithton
Population			
Male	1,101	421	1654
Female	1,016	424	1707
Total	2,117	845	3,361
Age Groups			
0-4 years	6.30%	8.40%	6.80%
5-14 years	16.30%	16.30%	14.30%
15-24 years	11.10%	11.60%	13.90%
25-54 years	41%	44.70%	38%
55-64 years	12.40%	10.50%	11.10%
65 years and over	12.80%	8.30%	15.90%
Employment			
Full time	59.30%	54.90%	61.20%
Part time	24%	25.30%	27.50%
Median family income ($ weekly)	1054	894	1012

Figure 4.3: Demographic information for main West Coast areas Tasmania (2007)
Source: (Australian Bureau of Statistics 2007[accessed 17th August 2007], available at: http://censusdata.abs.gov.au)

Queenstown has a small hospital with limited acute care facilities, the closest major hospital to both Zeehan and Smithton is at Burnie, which is 140km from Zeehan by road, or 90km from Smithton. Air ambulance has frequent use in order to transfer patients these long distances. Because of this remoteness, each paramedic and volunteer is the primary emergency response to all pre-hospital cases in respective areas, there is no immediate backup from other paramedic officers. Services at local hospitals vary (Appendix L) and although ambulance crews can utilize local emergency departments, major medical and trauma patients require transfer to larger urban centres. Recent changes have taken place in the west coast area with regard to state government funding toward hospital and health facilities. Queenstown hospital has undergone a facelift with a new facility offering on site general practitioner and consulting rooms, among other services, opening in 2007. Roseberry hospital/medical centre was the subject of local unrest with plans to downgrade or even close the facility. At the time of writing however, 24-hour emergency access remained in place.

4.4 Rural Case - 'RESP' model

The second rural case study used is the proposed model of paramedic practitioner referred to as 'RESP' (Rural community engagement, Emergency response, Scope of practice extension, Primary health care) and arises from a study of existing innovations in rural Australia aiming to identify an expanded scope of practice for rural paramedics (O'Meara, Walker et al.

2006). As such, the units of analysis selected for this project are from areas of innovation as examined in the study by O'Meara, Walker et al. (2006). Within this study, paramedics identified as working within a 'RESP' framework are from the East Coast of Tasmania, as well as Mallacoota, and Omeo in Victoria.

Some demographic information concerning the three units of analysis within the 'RESP' case study is presented in Figure 4.4. The Glamorgan /Spring Bay shire, encompassing the Tasmanian East Coast area has an RRMA classification of R3 which refers to an *other rural area (population < 10000),* as does Omeo in Victoria. Mallacoota in Victoria has an RRMA classification of Rem2 which refers to an *other rural area (population < 5000)* (Australian Institute of Health and Welfare 2004).

The East Coast of Tasmania is an area of approximately 4000 sq kms and is one of great variation in geography, from beachside townships to mountain ranges and farmland. Populations vary greatly in holiday periods, with townships such as Coles Bay having a growth from a permanent residency of around 100 to 4-5000 visitors per day (Break O Day Council Website 2006).

State	*Location*	*Population*	*Males*	*Females*	*Median Age*	*Aged > 65 yrs (%)*	*Working (%)*
TAS	St. Helens	1786	889	897	41-53	25.0%	30.1%
	St. Marys	538	266	272	40	13.7%	29.4%
	Break O'Day	5553 doubles in summer	2843	2710	43	16.8%	30.9%
VIC	Omeo	234 increases in winter	117	117	37	12.4%	60.3%
	Mallacoota	1041 increases in summer	527	514	43-47	19.6%	38.7%

Figure 4.4: 'RESP' units of analysis: demographic summary (2006)
Source: (O'Meara, Walker et al. 2006: 10)

This growth is similar to Mallacoota in Victoria where the population can increase by approximately 8000 at holiday times. The township of Mallacoota is the last official township on Victoria's east coast before the New South Wales border, it is 25km off the main thoroughfare, the Princes Highway, and 523 KM from the capital Melbourne. Being a seaside village the township relies on tourism and fishing as main sources of income (O'Meara, Walker et al. 2006: 31; Wikipedia 2008).

Omeo, situated on the Great Alpine Road in South East Victoria also relies on tourism, especially during winter. The main industry in the area is farming, primarily cattle and sheep. The local area includes the surrounding smaller townships of Ensay, Swifts Creek and Benambra (O'Meara, Walker et al. 2006: 31; Omeo Business and Tourism Association 2008).

In all three regions, medical services vary, as outlined in Appendix J.

Innovative paramedic services in these areas emerged in response to locally driven demands for and by medical services. In 1997, medical services to the Tasmania east coast region were in a state of flux. The Tasmanian Government had proposed the closure of St Marys Hospital, while the local doctor at St Helens was experiencing a workload to the stage of feeling the need to take a necessary break. Ambulance services consisted of a volunteer Red Cross service at St Marys and Tasmanian Ambulance Service volunteers at St Helens, with other volunteer units further south. Because of these issues, the government pledged a dedicated intensive care paramedic service to the region. This was different to other paramedic services such as at Smithton or Zeehan in that the paramedic was to work as a sole practitioner and as an adjunct to varied volunteer units rather than being crewed specifically with one particular unit. Rather than operate under the characteristics of a ‘Sufficing’ model with a traditional standard of paramedic care, the ‘East Coast’ paramedic had the flexibility to extend the role to operate in

partnership with volunteers, hospitals, general practitioners, and the community (O'Meara, Walker et al. 2006: 12).

A similar theme of overworked local doctors appeared in the development of the paramedic for the Mallacoota region. In 2002, two doctors were working from a private medical clinic and having 24 hour on call responsibilities for the entire area. There were four volunteer ambulance officers and the nearest hospitals with fully staffed emergency departments were at Bairnsdale, Victoria, 242km away, and Bega, NSW, 114km away. The situation worsened with local doctors threatening to leave the area, and the East Gippsland Division of General Practice approached Monash University School of Rural Health for assistance. With funding from the Victorian Department of Human Services, a process called Transforming Rural Urgent Care Systems (TrUCs) provided a framework to assist rural communities with urgent care response (O'Meara, Kendall et al. 2004). Workload numbers did not warrant a full time paramedic crew model for the area and so, with community consultation, the Paramedic Community Support Coordinator (PCSC) was introduced (O'Meara, Kendall et al. 2004; O'Meara, Walker et al. 2006: 31).

Similar to the ‘RESP” paramedic in Tasmania the Victorian PCSC is a solo practitioner, works in response to local needs and requirements, and is involved in primary health care and community education working as a

member of the local health care team. As well as introduction at Mallacoota, at the same time the Omeo region also emerged as a PCSC location. Although Omeo health services included a local public hospital and emergency department, pre hospital care was still in the form of ambulance volunteers. Placement of a PCSC at Omeo offered an opportunity not only for support and for training of volunteer units but the potential to work with local medical staff in an established medical centre. This potential has seen realization and is evidenced by mention in several Omeo District Health annual reports (Omeo District Health 2005: 9; Omeo District Health 2006: 12,13; Omeo District Health 2007: 11).

In both Mallacoota and Omeo, the PCSC works Monday to Friday and is not required to be on call, in this way each area requires only one paramedic. Volunteers provide the primary pre-hospital response. However, even though call duties are not a job requirement each PCSC is 'called out' after hours if additional expertise is required. This is different to the Tasmanian east coast paramedic, two of whom rotate through four days on then four days off, being on call each day.

The numbers of cases attended by the East Coast paramedics in Tasmania for the year 2006 was 921 (Source: Tasmanian Computer Aided Dispatch System). For the same year, there were 323 cases attended by paramedics in Omeo, and 137 in Mallacoota (Source: Rural Ambulance Victoria). The types

of cases paramedics were dispatched to in 2006 on the east coast of Tasmania are mentioned in Appendix L, with the most common being inter-hospital transfers, falls, cardiac, unknown events, and falls.

4.5 Summary

The case study strategy comparing rural and urban paramedic roles utilizes three separate case studies. One examines the urban paramedic and two look at differing models of rural paramedic practice.

The urban case is composed of units of analysis chosen from traditional models of paramedic practice in Tasmania and Victoria. In this traditional model, intensive care paramedics work with colleagues who may be at different stages of qualification. Of the two rural cases, one represents the 'Sufficing' model where intensive care paramedics work alongside volunteers and the other represents the 'RESP' model, which sees innovative paramedic practice in local communities.

The following chapter offers results from a comparison of the urban case with both of the rural cases, in addition to a comparison between each of the rural models.

Chapter 5
A Comparison of Rural and Urban Paramedic Practice

5.1 Introduction

The purpose of this chapter is to address the two research questions:

1. How does the practice of rural paramedics compare with that of urban paramedics?

2. How does the practice of rural paramedics compare across different local approaches?

The following case study presentation reveals that differences between rural and urban paramedic practice appear in four main ways. Rural paramedics:

1. practice a community response rather than a case dispatch response,
2. are inter-professional team members rather than solely ambulance team members,
3. are educators and managers of volunteers rather than clinical supervisors and,
4. are isolated health workers rather than having access to full resources.

The case studies reveal little difference between the roles of paramedics in separate rural models of practice. The one major similarity in all cases in the study is the need for further attention to continuing professional development for both urban and rural paramedics. The key themes underlying these differences and similarities appear in Table 5.1.

5.2 A community response versus a dispatch response

> *"We became involved in a lot of community things like...up at the hospital we became involved in pre-natal classes, being involved in drugs in rural areas, and being involved in some of the committees there…first aid, we run first aid classes, not under the guise of the ambulance service but to assist."* (Rural Paramedic, 'Sufficing' model)

This section details how rural paramedics demonstrate a whole of community response by involvement as: 1) community educators, 2) a primary health care practitioners, and 3) becoming part of a community social fabric. Rather than a whole of community approach, urban paramedics are concerned with the types of cases attended, and specifically these include the mental health, chronic care, and social types of cases.

5.2.1 Community education

All rural paramedics interviewed, regardless of model, carry out the role of community educator, whether this is a formal role or not. A major component of this is the education of a volunteer ambulance workforce, and discussion of

this takes place in section 5.4 Other community education ranges from paramedic involvement with other health care workers to general community members. There is little evidence of proactive community education by urban paramedics, although there is a desire from several urban paramedics to be more involved in such education.

Education of other health professionals is a common activity for all rural paramedics interviewed and progresses from an informal to a structured formal approach, with content ranging from basic first aid training to advanced clinical practice. Paramedics in the hospital or health centre setting will conduct sessions with doctors, nurses, and any other interested allied health professionals.

The ‘RESP’ paramedics in particular are responsible for conducting nursing education sessions as part of continuing education within the particular hospital environment. In one case, the paramedic conducts three nurse-training sessions every six months with certificates issued by the hospital. Another example sees education in defibrillation and cardio pulmonary resuscitation every six months.

Key Themes			Thematic Comparisons
Urban paramedic	**Rural 'Sufficing' paramedic**	**Rural 'RESP' paramedic**	
Concern with management of chronic, social, and mental health care	Proactive community education Primary health care Part of social fabric	Proactive community education Primary health care Part of social fabric	Community based response Vs Case dispatch response
Limited extension of care to hospital environment Not a convenient replacement for hospital staff	Regular consultation with rural doctors Environment extends from pre-hospital to hospital Clinical expertise of paramedic relied on by others Education of other health care members by paramedic	Regular consultation with rural doctors Environment extends from pre-hospital to hospital Clinical expertise of paramedic relied on by others Education of other health care members by paramedic	Interprofessional team member Vs Ambulance team member
Training of volunteers associated with remuneration Peer support for students Mentoring for students	High dedication to volunteer training Extension to management role - peer support - staff relations - supervision - recruitment - OH&S	High dedication to volunteer training Limited extension to management role - peer support - recruitment	Educator and manager of volunteers Vs Clinical supervision
Opportunity to train in critical and wilderness care Regular peer contact	Emergency response in wilderness and isolated areas Lack of opportunity for education and training in critical care and wilderness Case response with volunteers Little peer contact Use of community networks High visibility Limited suitable accommodation	Emergency response in wilderness and isolated areas Lack of opportunity for education and training in critical care and wilderness Case response with volunteers Little peer contact Use of community networks High visibility Limited suitable accommodation	Isolated health worker Vs Access to resources
Limited appropriate continuing professional development	Limited appropriate continuing professional development	Limited appropriate continuing professional development	Continuing professional development

Table 5.1: Key themes from a comparison of urban and rural paramedic roles

As evidenced by large attendances at these sessions approaches by paramedics to offer education are usually well received. However, sometimes boundaries become obvious, and willingness to accept the paramedic as an expert is less forthcoming when differences of opinion arise. One paramedic gave the example of a snakebite guideline written up to expedite the transfer of snakebite victims to more appropriate centres of care.

> *"I've tried to have a guideline written up for snakebite and it was rejected on the basis that it advocated every snake bite be flown out….and no…they want to sit on snake bites until some of them become symptomatic, and I'm like going, it's too late once they've become symptomatic. They have antivenin up there but with the side effect of the antivenin plus the venom itself, you have a much more complex patient to get out of there".* (Rural Paramedic, 'RESP' model)

This example of conditional acceptance as an expert came from a rural area where a lack of permanent doctors exists, with most tending to rotate through the community, and paramedics indicating that most relief doctors are not interested in attending education sessions conducted by paramedics.

Where paramedic education is always well accepted is in the area of health care to general community members. Basic first aid training for groups such as scouts, schools, and elderly citizen groups is an essential element of the paramedic involvement within rural communities. This community education role extends beyond the first aid class, and paramedics are involved in the education of community members in their own homes on matters of

medication advice or general health care. I found that what the paramedics were saying appeared close to the formal roles as practiced by community paramedics in the United Kingdom where general health care education is also offered to community members they attend (Mason, Wardrope et al. 2003: 197). It is in this community aspect that education begins to appear as more than an isolated skill, appearing as part of a primary health care role, and this is discussed further in section 5.2.2 (p. 150).

The education of community members in their own homes is not unique to rural paramedics however, and urban paramedics commented on how application of their medical knowledge helped educate community members. This ranged from assistance with medication, advice on how to manage minor injury, to advice on how to manage general health care in the home environment. The difference between the urban and rural paramedics concerning community education is that education by urban paramedics generally takes place when dispatched to a community member who calls for an ambulance; the proactive community education displayed by the rural paramedics does not seem to be present.

> *"Enquiries about what sort of medication they've been put on by their doctor that they think might be disagreeing with them, sometimes like antibiotics "I think they are making me feel a bit sick" you know, that sort of thing...the usual large number of queries about things like they have already seen their doctor about, like a sore ankle or headache, lots of problems, like they haven't seen their doctor for a few days…a lot of this is*

> *after hours and they want to be checked up. I'm hearing that a lot "I just want to get it checked out"* (Urban Paramedic)

> *"In all fairness we do come along and actually do…you know…come up with some kind of solution for people so...I guess they're going to keep calling us...and we turn up...we always turn up!"* (Urban Paramedic)

There were however, several comments on how a more proactive approach would be of benefit to an urban community. In such instances, urban paramedics could educate medical centre or nursing home staff in general first aid and emergency care training, and in appropriate use of ambulance resources. Urban paramedics in this study mentioned arriving at a nursing home to find a critical patient with no oxygen or basic care in place, or alternatively, arriving lights and sirens only to find a patient who is well enough for transport by taxi. For this second type of patient a proactive approach to community education may very well ease the burden created by inappropriate use of paramedic resources.

> *"If our role is changing then one of the things we need to do is, absolutely urgently, and it's overdue, is to like, I said before, public awareness and education. We need to get out there to the nursing homes and….I think there is somebody, not sure who it is but, there is somebody, one of our supervisors who has actually gone out and liaised with a couple of the nursing homes, but other than that I can't really think of anything else."* (Urban Paramedic)

> *"Especially the people that keep calling us. Over and over again. We need to go out there and sit down with them and see what their level of pre hospital emergency training actually is. It may be completely, and a lot of the time I think it is, completely, inappropriate. If we have done the training then we will turn up and we will know that they are calling us because they have done their first few steps and they have recognised that this person really does need an ambulance. Rather than just call an ambulance…I think that education is something that we should definitely be doing more of. ….and maybe just initially aiming at those places that do call us the most, like nursing homes, community nurses, GPs, all that sort of stuff. May be we should actually be delivering their first aid training."* (Urban Paramedic)

The growth of a proactive role as an educator however, needs to consider the formal recognition and qualification of paramedics in this role. The current formal recognition of an education role for paramedics is found only in rural position descriptions regarding education of volunteer ambulance officers or community members (Rural Ambulance Victoria 1998; Rural Ambulance Victoria 2003; Rural Ambulance Victoria 2005; Tasmanian Ambulance Service 2007). Further to this, community education by the paramedic is a formal part of rural paramedic duties in only one position description, that for the Paramedic Community Support Co-coordinator of Rural Ambulance Victoria (now Ambulance Victoria) (Rural Ambulance Victoria 2005). Added to this rural only recognition as an educator, the only formal education requirement for any paramedic is a Certificate IV in Assessment and Workplace Learning (Tasmanian Ambulance Service 2007).

These minimal formal requirements to qualify as educators may exist because of a possible assumption that clinical competence within a given community may automatically qualify paramedics to provide education for others. This concept appears with other rural health care disciplines, where it is argued that in the absence of qualification, community support provides the confidence necessary for health workers to provide evidence based education (Rogers, Dunn et al. 2008: 42). Even so, regardless of community support two of the rural paramedics interviewed had a background in teaching prior to commencing their current positions, and others all completed further education to enable knowledge of teaching. They saw that formal qualification should be an essential element in areas where the paramedic is involved in the practice of health care education.

> *"I didn't have any specific training (in education), I went and did a TAFE course, certificate IV in workplace training and assessment off my own bat."* (Rural paramedic, 'Sufficing' model)

> *"I did a bachelor of pre-hospital care (post graduate) at Charles Sturt University which had a big training component."* (Rural paramedic, 'Sufficing' model)

> *"I already had a background in teaching first aid and those sort of things and was doing clinical instruction on road, but certainly, having the opportunity to go and teach at Monash University and that sort of thing (outside of the ambulance service), increased both my body of knowledge and modified a bit of my delivery style."* (Rural paramedic, 'RESP' model)

5.2.2 Primary health care

The role of rural paramedics extends further into the community than emergency response and community educator, and a primary health care role is an important part of this extension. There is committed involvement with primary health care groups of many differing types. These range from community health centers and drug rehabilitation classes, to aged and rural health care groups

> *"The role of the paramedic was just like your normal role of just maintaining the ambulance service…recruitment and training of volunteers and maintaining their training. But on top of that we became involved in a lot of community things like...up at the hospital we became involved in pre-natal classes, being involved in drugs in rural areas, and being involved in some of the committees there…first aid, we run first aid classes, not under the guise of the ambulance service but to assist."* (Rural Paramedic Sufficing model)

It is usual for rural paramedics to be members of local community health councils or community health centres and as a member of such groups, there is opportunity for education of members, but more importantly to allow planning of approaches to primary health care within the community. This is evident with the involvement of one 'RESP' paramedic who has been instrumental in the establishment of a community health centre in an area previously lacking in allied health support such as regular physiotherapy, occupational therapy or even drug and alcohol education.

There is extension from a general education role to a primary health care role and I found that rural paramedics are more than willing to adopt innovative methods to achieve a primary care role, and help promote effective health approaches for community members. One of these methods is use of local media, and this ranges from getting the message across to ring for an ambulance by using the 000 emergency phone number, to providing information on how to treat certain emergency conditions. There is observation that community education via the media is seeing some success.

> *"People can call in and they would ask what would you think and I would go " oh well, its pretty hard to diagnose over the phone but if I had a problem like that I think I would be dialling 000" always come back to calling triple 0 or like …you've got a resource here, why don't you use it.You pick them up and put them in a car you never know what sort of damage you might be doing to that fracture or that break, or the tissue underlying it. So we've seen an increase in the numbers of people who are calling 000 rather than presenting at the doors of the emergency department, which hopefully is through that sort of stuff!"* (Rural Paramedic 'RESP' model)

Where the primary care role does not appear is in the data from the urban paramedics, but this does not mean that urban paramedics do not see a future for such a role. The Tasmanian urban paramedics in this case study commented on the future advantages of paramedics working in urban area medical clinics. Community members with minor ailments such as chest infections requiring x-ray or antibiotics could gain treatment at such clinics. Adoption of an inter-professional approach would see paramedics working

alongside nursing staff and consulting with general practitioners where required.

> *"You would have your station set up where you would have a certain times where you would be running it like a clinic. People could come to you. Mrs. Jones has a bit of a cough and a cold, needs a chest x-ray, and maybe basic antibiotics, you could deal with that. With close ties to GPs, and that sort of stuff. You would work hand in hand. The GP might refer somebody to you, you know, they ring up, look I've had a cold for a couple of days, green sputum, that sort of stuff, you know…"go and see the paramedic practitioner; he will sort that for you. I'm inundated with patients as it is". You might get the patient in and go "a bit outside my scope of practice" ring the GP up..."I need you to look at it"..."ok shoot them over, I'll have a look" You would work together."* (Urban Paramedic)

5.2.3 Part of a social fabric

My findings show that in all cases while living in a rural community paramedics become part of the social being of that community, with membership of community groups outside of health care being common. Rural paramedics choose to become closer to the community with examples being participation in the local sports clubs, museum group, or other community groups. In one case, the paramedic joined a local Land-Care group, which had benefits for all participants. The ambulance station had removal of overgrown blackberries, and all enjoyed a group gathering and social occasion.

Interaction with other emergency services such as fire and SES is interesting in that it involves rural paramedics themselves often participating in training offered by the various other services. One rural paramedic even commented on how ambulance, fire, and SES could have joint roles.

> *"Why can't we be something like a town emergency service co-ordinator? We are supposed to have flat time, so why can't we take on certain administrative roles like the SES and Fire Brigade. Why can't we be trained in basic fire fighting? Why not? I don't mean like the full Hazchem because they will send their guys down, but at least teach me how to drive the truck, set the hose up and point it at the fire. Even if I am under the direction of the chief. I will always be subservient to the chief, it's not taking over, just being productive."* (Rural Paramedic 'Sufficing' model)

This in reality may be difficult due to attendance at the same cases but illustrates the closeness with which various members of a rural community are prepared to work together to achieve a common end. It is within these various groups that there is a sense of social camaraderie beyond that of the working environment.

It is possible that heavy community involvement could come at a cost if not careful to limit the amount of work taken on. I noted that paramedics stated members of the community would actively seek the participation of a rural paramedic. This had the consequence that several paramedics commented they had to remain aware of their own limitations, and not to take on too much of a community workload.

> *"Have just been back from holidays for only 4 days and have already been approached by groups wanting lectures!"* (Rural Paramedic 'RESP' model)

> *"I think that the thing you have got to watch with a position like this one is that you don't put your finger in too many pies because you can end up pretty tired pretty quickly and you've got to focus, you've got to hone your focus in so you do at least a couple of jobs pretty well rather than a whole lot of jobs scattered."* (Rural Paramedic 'RESP' model)

Further evidence to the paramedic fit within a rural community is that there is a consensus among all the rural paramedics in this study that urban paramedics have trouble understanding the complexities of community involvement in a rural area. A good example of this came from an urban paramedic rostered to a rural location for a relief period. This urban paramedic had come to a rural area from a busy urban one and expected community based volunteers to have the same response to training, and ability to practice as qualified paramedics did. The volunteer group disintegrated in a very short time, with community concerns that there was no longer a viable ambulance response to the area.

Almost in reiteration of what the rural paramedics' say about urban paramedics in a rural area was a comment by one urban paramedic on the experience of working in a rural area. There was no mention of community involvement:

> *"Work in these quieter areas is the same as in urban areas. Not much peculiar to the areas except maybe more water accidents or RTAs [road traffic accidents]"* (Urban Paramedic)

5.2.4 An urban case based response

Whilst rural paramedics are concerned with a whole of community response, urban paramedics mention community response relating to the types of cases they attend in the community. The types of cases urban paramedics mainly have concern for are chronic care, social care, and mental health care. A common theme is that urban paramedics feel under trained in each of these community-based areas.

A focus on attendance to community members requiring chronic and social care is common to all urban paramedics in this study, and appears exacerbated by difficulties accessing urban General Practitioners (GPs). Urban paramedics reported various situations. Patients who have problems with medication; have recently seen their general practitioner but are unclear on treatment regimes; people who are unsure of how to manage elderly relatives at home; elderly people who may just need a lift after falling to the floor; or even those that simply want a chat because they are lonely. One urban paramedic comments:

"We are seeing a lot more social side of things, mental health, people who cannot access...local GP type work, where people cannot access a local GP for a week or more." (Urban Paramedic)

"A lot of the GPs down here have their books closed now, it can take anything up to a couple of weeks to get in to see a GP, they don't want to wait that long so they will ring us, with a view to getting into hospital quicker...the books are closed on town doctors as much as they are in country areas. There might be a lack of a GP in a country area, but there is a lack of GPs in the city because they are not available. Effectively the same thing." (Urban Paramedic)

All these community members require some form of health care; however, urban paramedics feel that they are not currently equipped to manage these types of care.

"I do not think we train for any chronic area…wound management, catheters, small things, we just do not focus at all on it. We are probably getting to the point where we probably should."(Urban Paramedic)

This focus on chronic and social care by urban paramedics during interviews was accompanied by a degree of frustration. The following phrases were used by urban paramedics:

- *They (patients) can't get any other help;*
- *just going(to the patient) for (to give) advice;*
- *no chronic training;*
- *pick it up (training) by experience;*
- *the way we deal with it now loads up the system;*

- not the right path to take (in reference to a focus on critical care);
- (patients) can't access a GP for a week or more.

There was also lack of satisfaction gained from attending such cases.

> *"Geez…..I am shocked at the number of non-ambulance cases that we attend. That was probably because I knew nothing about ambulance before I joined. There was a momentous day on the garage where I first go to touch an ambulance! When I actually went on road, I was a third for two weeks and in that time I thought that because I was a third that is why we were going to all the crap work! ...I thought because I was new they must only be going to not emergencies...and that just never really changed...until I went off to branch [rural] stations."* (Urban Paramedic)

Further to this was that the urban paramedics interviewed believed that new paramedic recruits do not realize that the majority of work is chronic.

> *"Like it's very frustrating…and so I think that number one we need to recognise that our role has definitely changed and there needs to be a decision as to whether we are going to insist we are truly an emergency service, and they are going to have to find alternative ways of looking after all of the non emergency things we go to or they are going to have to realise that our work has changed dramatically and train us accordingly...and that's also going to help with recruitment because they're not going to be putting as much emphasis on perhaps recruiting people who will make excellent…paramedics...like you know your helicopter paramedics who love your Cat 1s(emergency calls) and big traumas and that sort, that's the sort of person they look for when they recruit. Those people often do not last long because they just get so bored with the crap work."* (Urban Paramedic)

The emotive description of non-emergency work as ‘crap’ work in these two quotes offers further reinforcement to the frustration and lack of satisfaction that paramedics feel when confronted by these cases they feel ill prepared to manage.

In addition to chronic and social work, the issue of mental health is one of particular concern for urban paramedics in this study, and attendance to psychiatric cases is certainly among the most common of cases attended in urban areas (Appendices M & N). Mental health problems that confront paramedics present in forms such as general psychiatric patients; overdoses; attempted suicide and suicide of other types; depression; anxiety; homelessness; and general inability to cope with the demands of society.

Despite frequent attendance at such cases, and reiterating concerns with social and chronic care, urban paramedics in this study all mention a lack of preparedness to be able to manage the care of patients with mental health problems.

> *“The extra skills and knowledge (critical care) I haven’t really applied yet, and I find that I’m still going to people who have a fascination with their bipolar at 2 oclock in the morning, and I really don’t really know what bipolar is!”* (Urban Paramedic)

Like the limited access to GPs in social and chronic care, this is compounded by what paramedics note is a lack of community based care for the mentally ill; the only option for the paramedic is to transport the patient to hospital.

> *"Mental health people (patients) who cannot access mental health services…its broadening into the more generalised (ambulance) work."* (Urban Paramedic)

> *"I think I had one lecture on mental health, and we do a huge amount of work where we go to people with mental health issues who are having exacerbations at night….the only thing we can do is cart them off to the emergency department and dump them where they are not going to see anybody until the morning."* (Urban Paramedic)

Both sites examined in this case study have in place guidelines that deal with mental health. However, these guidelines are limiting to the paramedic in terms of patient management. Whilst the "Mental Status Assessment" allows for the paramedic to assess a patient's mental status based on the nine categories of appearance; behaviour; speech; mood; response; perceptions; though content; thought flow; and concentration, it does not offer guidance on how to manage the patient (Rural Ambulance Victoria 2008b).

Similarly the "Agitated Patient" guideline is aimed at management of clinical causes such as hypoglycaemia or drug overdose; verbal de-escalation of a confronting situation; or sedation where the patient is a risk to themselves or others (Rural Ambulance Victoria 2008c). Management of difficult clients is

by the use of sedation or police assistance (Victorian Government Department of Human Services 2002pp. 1-26).

Part of the differences between rural and urban paramedics is that while urban paramedics are quite vocal in their expressions regarding the chronic, social, and mental health cases they attend, there is no mention of such by rural paramedics. Certainly, within Australia a postgraduate qualification in rural and remote paramedic practice at James Cook University has components based in social and chronic care (Raven, Tippett et al. 2006: 4) and so this type of care has been deemed important in a rural community. When earlier discussing community education in section 5.2.1 (p. 142), it was revealed that community support provides the confidence necessary for health workers to provide evidence based education (Rogers, Dunn et al. 2008: 42), perhaps it is because of this same community support that rural paramedics are able to mange the social, chronic, and mental health care cases as part of their normal role. Further investigation is required to help gather evidence in this regard.

5.2.5 Summary

Rural paramedic practice is different to urban paramedic practice in that rural paramedics are involved in a whole of community response rather being limited to a dispatch response to emergency cases. My findings show that rural paramedics demonstrate this whole of community response by involvement as: 1) community educators, 2) a primary health care

practitioners, and 3) becoming part of a community social fabric. Rather than a whole of community approach, urban paramedics are concerned with the types of cases attended, and specifically these include the mental health, chronic care, and social types of cases that urban paramedics feel deserve further attention in paramedic education and training.

5.3 An inter-professional team member versus an ambulance team member

> *"I'm on the community health council, where a number of different health workers get together once a month and look at what sort of projects we have got going in the town, how we can support that sort of stuff. So that's like your health promotions officer, your physiotherapist, your occupational therapist, district nurses, remote area nurses, myself…You do hospital, nursing, home care people, and we look at individual cases for project work."* (Rural paramedic, 'RESP' model)

One difference between urban and rural paramedics is that in all cases in this study, rural paramedics exhibit a more comprehensive inter-professional approach and are involved as members of some form of community health organization outside of the ambulance service. This willingness to practice outside of the 'silo' of emergency care is evident with paramedics placing themselves on local community health councils alongside physiotherapists, occupational therapists and district nurses, as well as being involved in community health promotions and educational initiatives ranging from pre-natal classes to drug and alcohol education.

This comprehensive approach to community health care sees other health professionals being aware of the roles of rural paramedics and willing to help in the pre-hospital environment. Rural doctors will act in a consultative role over telephone links, but also, where available, both doctors and nurses will mobilize to provide assistance at a pre-hospital scene.

> *"When somebody rolls a car on Ocean Beach history says it is something dramatic. When I got down there everyone was on the beach and this fellow had been in the water, they just put him on the spine board and had got him out. Had to think of the tide, with two ambulances, a fire engine and police car!! So it was literally grab him and go because the water was around our ankles. We got him back there and he was really cruddy, he had water in his lungs and we…we all...took the decision to intubate and I was the one who had to do it...so we were ringing up the hospital and they were saying give him 1mg morphine 1mg morphine and wait one minute..."look there are three of us here surely we could manage his airway"….took about 15-20 minutes to get him relaxed enough." (Rural paramedic, 'Sufficing' model)*

In this quote, the paramedic illustrates how other health professional such as nursing staff are willing to help in the pre-hospital environment, and how, by consulting with a local doctor a greater scope of paramedic practice becomes available at the scene.

Rural paramedics too, will extend care from the pre-hospital environment to the hospital environment. I found that paramedics considered themselves the most experienced practitioners concerning some critical care skills in a rural

area and the awareness of their role translates to other health care staff calling on the expertise of the paramedic.

> *"...the most dramatic stuff is when the air ambulance arrived I intubated the patient (quite proud… he (doctor) said I'll set up and you intubate ….everyone said "(name removed) is going to intubate… "(expletive deleted) I can't fail!"* (Rural paramedic, 'Sufficing' model)

Within rural communities, this expertise creates a degree of dependency on paramedic care. This dependency becomes more critical in one of the areas examined, where the 'RESP' paramedic concerned operates within a region where the only medical facility is a private clinic. In times where the clinic has no doctor present, the paramedic will provide clinical advice for patients that present.

> *"…there is no hospital and it totally changes the equation. If there is no doctor in town they will ring up and make sure I am around… they will talk to us about patients about what is wrong, how we are going to move them. Having no hospital it is a totally different role."* (Rural paramedic, 'RESP' model)

Even in situations where a local emergency department is in operation there are occasions where a local doctor may not be able to attend the hospital in the immediate instance. On these occasions paramedic expertise is again called on and rural paramedics will assist with other health staff in the

emergency department, continuing and developing the care initiated ‘in the field’ until a doctor becomes available.

> *“We spend a lot of time in the hospitals, it is rare to drop and run. For instance we have to write up drugs in the hospital because we are often there when the doctors are not. You have to have an understanding of what goes on in the hospital environment. Doctors don’t have time to look after a patient in A&E when there are 30 at the clinic as well. There are no scanners, no bloods, there is little they can do, so the paramedic continues on until the aircraft can arrive.”* (Rural paramedic, ‘RESP’ model)

Treatment while waiting for the doctor in this extension of critical care into the hospital emergency department comes with a proviso. Although willing to help, this extended hospital emergency care is part of continuing the existing pre-hospital patient care. The paramedics are not convenient replacements for a doctors or nurses.

> *“If you start providing additional emergency coverage into the community, for example, suppose you are rotating with the doctors, you are tying yourself down more and more, and it becomes harder to get away.”* (Rural paramedic, ‘RESP’ model)

An inter-professional approach in a rural area is an acquired skill, and needs paramedics to participate in creating an awareness of what they can contribute. Whilst there was suggestion that the first thing nurses will do when emergency cases present is call the assistance of a paramedic, examples

were provided whereby some doctors would continue without paramedic contribution, taking the view point that the paramedic would only be required when transport was necessary.

> *"I had one case where…and it was classic of probably 4 or 5 cases this year, where I walked past the emergency department and a doctor was in there with a guy who presented to the door of the emergency department, had fallen hands first into a fire, burns up his chest, burns to both hand, full thickness burns around the fingers and I'm sort of come in and "do you want a hand there?"(Paramedic)… "no, no, we're pretty right"(Doctor)* (Rural paramedic, 'RESP' model)

The paramedic felt that the doctor in this example was simply unaware of how the paramedic could contribute in management of this critically injured person.

An inter-professional approach means there must be care not to encroach on professional boundaries. Whilst for a paramedic it may be fine to consider oneself as an expert in emergency medicine, others in the rural health community may have the same opinion regarding their own professions.

> *"When I first arrived there was sort of a bit of "what makes you better to be in the emergency department when the doctor is not here and we are"*(Rural paramedic, 'RESP' model)

> *"... I think we would have to be careful, it would be a positive step if we were getting into the acute treatment role, but having come from nursing a lot of stuff they do I don't want to get involved with. Some of the acute stuff could be good… I don't want to be used as a dogs body for anything."*(Rural paramedic, 'Sufficing' model)

Education of health professionals by paramedics is an important part to inter-professional practice. The inter-professional approach to rural health care requires some effort and the education of other health staff by paramedics, as already discussed in section 5.2.1 is an integral part to being able to create an awareness of the paramedic role in other health professionals and awareness for the paramedic of these other professionals.

> *"As you get into the training and they go "this is fantastic, we haven't had a training school like that before" even down in [other rural areas] they go "is [rural paramedic name deleted] around, we've got someone who just come in with she was talking about that last week " it just changes the dynamics of it"* (Rural Paramedic, 'RESP' model)

Such is the involvement of rural paramedics with other health disciplines that suggestions for the future were made of paramedics working from Multi Purpose Health Centres. It is of interest to note here that the Tasmanian urban paramedics also commented on the advantages of paramedics working in urban area medical clinics. This is especially so given earlier comments regarding the inaccessibility of urban GPs (pp.155-156). Community members with minor ailments such as chest infections requiring x-ray or antibiotics could gain treatment at such clinics. Adoption of an inter-professional approach would see paramedics working alongside nursing staff,

and consulting with general practitioners where required. This type of 'practitioner' role, working in an inter-professional team has seen successful implementation in the United Kingdom, where paramedic emergency care practitioners rotate through minor injury units (Cooper, Barrett et al. 2004pp. 614-8; Mason, O'Keefe et al. 2007pp. 239-242).

In comparison to the inter-professional role of rural paramedics, I found that urban paramedics do have a limited inter-professional role. Like their rural colleagues, urban paramedics report working together with nursing staff, allied health staff, and doctors to provide a continuation of care from the pre-hospital to the hospital environment.

> *"If DEM (Emergency Department) becomes inundated, we will help them in getting patients ready. We will strip them down, might put a monitor on, put dots on, get them all ready to help save time. If the doctor has got a fairly big job in 'resus'[resuscitation] we won't walk away straight away we will stay around."* (Urban Paramedic)

This type of acute care is not without limitations though. Paramedics will assist in accident and emergency departments in times where the department is busy, but are also required for response to the next 'on road' dispatch.

> *"If they are on overload then we will help people, go to resus [resuscitation cubicle]…sometimes just help do something like help the doc put chest drains in, help suture up, just offside them, just to get that done because there are no hands free to do it. You just dive in and help. However, there is nothing structured."* (Urban Paramedic)

Whilst urban paramedics during interviews displayed positive emotion toward being able to help in accident and emergency departments, extension of care within the hospital environment is not always a satisfactory arrangement and depends upon the nature of care. Whilst happy to assist in emergency procedures, urban paramedics were not as pleased when it came to general nursing duties. Serving as an example, at the time of conducting this study, the Tasmanian urban paramedics were experiencing a process referred to as 'ramping'. On presentation at the hospital accident and emergency department there was often a lengthy delay in being able to have the patient triaged by hospital staff and allocated a bed. This was due to bed and staff shortages within the hospital. Paramedic crews were then required to continue care of the patient in the hospital environment. This care often amounted to general nursing duty care of chronically ill patients, and sometimes lasted up to several hours, again linking to the earlier mentioned concept of 'crap work' in the eyes of paramedics (pp.157-158).

5.3.1 Summary

Rural paramedics display a comprehensive inter-professional approach to health care in the community. My findings show that rural paramedics are involved in some form of community health organization outside of the ambulance service, and this approach creates an awareness of the role of the paramedic, and willingness of other health professionals to tap into the clinical expertise of the paramedic. In the same respect, there is a willingness of rural paramedics to help in the hospital environment. Inter-professional awareness does not just 'happen' and rural paramedics work to foster relationships between different health professionals. Both urban and rural paramedics suggest that a future may lie in an extended scope of practice with paramedics working side by side with other health professionals in multi purpose health care clinics and emergency departments.

5.4 An educator and manager of volunteers versus a clinical supervisor

> *"Ambulance volunteer training, it is clinical training, education, support, also recruitment and retention strategies, that sort of stuff. Most of my stuff with my [ambulance] volunteers, even if it is auditing or clinical support it is all still part of education, and a lot of the staff management is about education."* (Rural Paramedic, 'RESP' model)

Interviews with rural paramedics reveal that working with volunteer ambulance officers is a very important component of rural paramedic

practice. It is important to recognise that this work extends to more than training to attend emergency cases, and I find that an apt description is volunteer management. Aspects of this management include not only training, but also staff relations, peer support, clinical support and recruitment.

Rural paramedics regard the training of volunteer units as an important priority. Much of this training takes place outside of regular shift hours. This is an ironic twist, with the paramedics themselves contributing time on a voluntary basis. This is also very different from comments where urban paramedics mentioned their experiences with volunteer training. Comments concerning training of volunteers by urban paramedics occurred alongside comments about remuneration for conducting this training during overtime hours.

Volunteers will also put in a large degree of effort to attend training in their own time, with the paramedics appreciating the effort put in by volunteers. There is a sense of 'fair play' in support of this effort.

> *"I will do one on one training with Volunteers when they are here, I feel obligated."* (Rural paramedic, 'Sufficing' model)

In general, rural paramedics are dedicated to training of volunteer units, and development of novel approaches in their training methods occurs.

> *"For training down here I've been given one of those manikins you can iv and intubate, I'll try and use that as much as I can. Adds a bit of realism, and where I can't use the dummy I will use someone else. We've got plenty of old overalls in the cupboard. stick these on…splash some red on…you're the patient…may as well make you look like one...it's the only way to do it"* (Rural paramedic 'Sufficing' model)

> *"Also project work about taking my volunteers to large events in and around Melbourne so that, where there are field hospitals set up so there's another medical company, so I can pair them up with staff from another medical company so they can get the experience of doing patient assessments and watching trends in patient care and patient assessment under supervision of other staff. I've got some pretty keen volunteers who have been away and done those sort of things."* (Rural Paramedic 'RESP' model)

> *"Training has tended to be stuck in the classroom, I try and get it out."* (Rural Paramedic, 'Sufficing' model)

Paramedics stated that the varied methods of volunteer training play a crucial part in retention of volunteers within that particular group.

> *"If volunteers are trained well they become more confident, there will be more retention, you will have better volunteers with a lot less stress."* (Rural paramedic, 'Sufficing' model)

It is here that I found the important concept of volunteer management emerging from paramedic interviews. Rural paramedics needed to be careful when approaching the issue of volunteer training, and all stated an acute

awareness of their interactions with members of a volunteer group. This may take some time and effort to achieve.

> *"So just recognising what the other skills….getting taught what other skills levels can do. The nature of volunteer groups is that you are coming into their area, they are a little bit on eggshells because they don't know the new person, so if you know what they do you are not going to insult them as such...doing the big takeover."* (Rural paramedic 'RESP' model)

This management role seems to evolve to a more involved level as models of paramedic practice change, and I found that 'RESP' paramedics mentioned management of volunteer groups as a concept in itself, whereas within the rural 'Sufficing' model paramedics tended to act mainly in an education and training capacity.

> *"I've found that over the years the quality of the training the vollies [volunteers] receive is still dependant on the branch station officers."* (Rural Paramedic 'Sufficing' model)

> *"Train a group of volunteers, initial training and on going training."* (Rural Paramedic, 'Sufficing' model)

> *"I went and did a certificate in advanced groups leadership and a diploma in advanced groups leadership management throughout my first year there and that was invaluable in terms of working with the volunteers and facilitating the development of those groups, they became a connected group of people rather than a spasmodic group of people who once a month did training and had no…..to build the team rather than have a number of people who just come along and leave again."* (Rural Paramedic 'RESP' model)

> *"Also to help manage some of the more quirky personalities you can find in rural communities. So they can be very difficult people to work with, they presented with problems over the course of the year, and that course has helped me deal with those issues with that branch."* (Rural Paramedic, 'RESP' model)

This evolution of volunteer management is certainly apparent when examining the position descriptions for varied rural locations. The Paramedic Community Support Co-ordinator in Victoria, falling within the RESP framework, has within its position description terminology such as:

> *"Recruitment and selection of personnel; roster maintenance; management of employee performance; management of employee grievances; program development; industrial relations disputes and major issues; maintain cost effective availability of human and capital resources for emergency and non-emergency response; oversee and coordinate the testing of all plant and equipment assigned to the branch to ensure its effective functioning; provide leadership and motivation toVolunteers."* (Rural Ambulance Victoria 2005)

Looking at position descriptions for paramedics who are employed in areas that fit the rural 'Sufficing' model, less management terminology is used and is limited to activities such as recruitment, supervision and training of volunteers, patient care management, record keeping, or vehicle maintenance (Rural Ambulance Victoria 1998; Rural Ambulance Victoria 2003; Tasmanian Ambulance Service 2007).

This management ‘evolution’ does present with a blurred delineation between models of rural paramedic practice, and rural paramedics in both models will be active in aspects such as peer support and recruitment for ambulance volunteers. Peer support is more than conducting debrief sessions following particularly difficult ambulance cases, and requires a degree of understanding for all the personalities involved within a volunteer group. Whilst attending cases with volunteers rural paramedics need to know when to step in and when to step back. Because of the mix of people involved, rural paramedics need to be aware of how each will react in a given situation, and when the unexpected arises, be able to manage appropriately.

> *“I do let them do their job if it’s obvious they can cope with the job. If they ask me to intervene I will intervene. If they ask and I think they are doing the job appropriately I will say you are right, keep going. Is there anything you need. Quite often you can walk into a residence and say you guys are ok I will go and get the stretcher, they are happy.”* (Rural Paramedic, ‘Sufficing’ model)

Rural paramedics enhance this peer support role by being actively involved in volunteer recruitment thereby establishing close involvement with members of the volunteer group from the outset. My findings are that recruitment is a role that many rural paramedics take to heart and apart from relying on word of mouth to encourage new members all report active involvement with local media and community groups in order to promote ambulance relations in the community.

The peer support role reappeared when interviewing urban paramedics, but I found that urban paramedics were not talking of support for ambulance volunteers but more as clinical supervisors for paramedic students. The role of clinical supervision is an important one for urban paramedics. All those interviewed had experience working with students at varied levels of qualification. Students may be undergraduate or undertaking postgraduate intensive care training. Acting as mentor, urban paramedics were required to observe the student progress, assess this progress, and offer constructive feedback.

The role of clinical supervision can be difficult and urban paramedics believe that many undergraduate students presenting from university education are often doing so with little ambulance experience and even limited life experience. This influences their belief regarding ambulance work.

> *"I think a lot of…I have seen them come out and they want to get and do the heights of learning stuff, like ECGs and stuff, and they are not that interested in the basics. I don't think these people have any representation of what we really do, I think they are coming out thinking it is all blood and guts and don't realise about the other more boring work that is actually being done."* (Urban paramedic)

In order to manage this lack of student experience urban paramedics as mentors are not classroom educators, but must be able to adapt techniques

appropriate to the large variety of situations an inexperienced student will encounter in the field.

> *"Some (students) have gone straight from school to uni, have never been out of home, and then placed in various social situations, from drugs, to affluent and just don't know appropriate responses."* (Urban paramedic)

This clinical supervision role is likely to become even more significant in coming years, with growing numbers of paramedic students and increasing demands on ambulance services to provide mentorship for undergraduates (O'Meara, Brightwell et al. 20th Feb 2007: 3; Queensland Ambulance Service December 2006: 3-4). With this growing importance though it is interesting to note that none of the urban paramedics in this study had sought any external qualifications as educators, unlike the rural paramedics, all of who had forms of educational qualification.

Considering the growing importance of clinical supervision for urban paramedics, it is interesting to note that supervision of paramedic students does not appear among rural paramedic data. In comparison, rural paramedics are unanimous in their expressions that volunteer education is an important element of their role. They are also unanimous in stating that in each rural area of this study there has been no contact with paramedic students.

> *"I'd be happy to have a student up there for a couple of weeks, so that they could just experience the difference between the paramedic role….as a predominantly primary emergency response, to a role of more diversity, to see they are not locked into just one model of paramedic practice. But I haven't seen any students to date."* (Rural Paramedic, 'RESP' model)

5.4.1 Summary

Rural and urban paramedics differ in their education and training roles with ambulance volunteers and paramedic students. Ambulance volunteer training is an important role for rural paramedics. This is so important that rural paramedics will contribute their own time in order to provide training to ambulance volunteers in their rural localities. Rural paramedics will extend the training role for ambulance volunteers to adopt novel approaches to this training, and get out of the classroom into the practicalities of an 'in field' approach. It is here that we see 'training' merging with a 'management' role. Rural paramedics are acutely aware of their interactions with ambulance volunteers, with peer support and recruitment becoming important aspects to a management role. In comparison, the role of urban paramedics becomes one of a clinical supervisor for paramedic students. The supervision role will become more significant with increasing demands due to growing numbers of paramedic students. Rural paramedics state little experience with paramedic students in their rural localities.

5.5 An isolated health worker versus access to full resources

> *"In the fact that you were isolated, you worked on your own, and there was no backup from anywhere, that was probably the big thing. As compared to working in [Urban City] where you had the resources around you, and that was probably the really big one."* (Rural Paramedic, 'Sufficing' model)

This section deals with the different situations faced by rural paramedics who experience relative isolation, in not only an environmental sense but also a professional sense. The isolation of rural paramedics presents in management of emergency care, the absence of peer contact, the need to create health care networks, being highly visible within the community, and the difficulty in obtaining suitable accommodation.

5.5.1 Emergency response

For rural paramedics in this study emergency work within an isolated area involves an ability to be able to manage in many different circumstances. Several examples occurred where the paramedic had to use a motorcycle to reach a patient in scrub, or a fishing boat to attend incidents out to sea. Requests for helicopter assistance or fixed wing air transport were common. In management of such a diverse range of emergency care, rural paramedics are the primary experts in pre-hospital care and as such are concerned with advanced critical care. My findings show that rural paramedics exhibit a strong desire to be able to practice advanced critical care skills such as

thrombolysis, rapid sequence intubation (RSI), and mechanical ventilation. This is not surprising; given that among the most common types of cases dispatched in rural areas were events such as cardiac or breathing problems (Appendices K & L). Even cases that appeared simply as 'Transfers' again involved cardiac and respiratory problems, but also included care of trauma patients among the most common transfer type (Appendix O).

Despite this concern with advanced critical care skills there seems to be an inequity in actual practice when compared to urban paramedics.

> *"I am Rapid Sedation Intubation (RSI) qualified but cannot use it here. I can paralyse after intubation but not before. It is restricted to certain areas. Even though I am qualified, I still cannot practice here."* (Rural Paramedic, 'RESP' model)

This sense of unfairness is also apparent in the availability of specialist training for rural paramedics and is evident with search and rescue. Several rural paramedics commented how involvement in search and rescue is common in a rural area; however, the only paramedics with training in this field work from urban centres.

Regardless of such, rural paramedics remain the primary emergency response and in order to provide a diverse range of emergency care in a rural environment are responsible for the maintenance of a competent ambulance volunteer workforce. In some cases, a volunteer crew responds first to an

emergency, with the paramedic located some distance away. Here the importance of the training offered by a paramedic to volunteers becomes evident, in order that they are able to manage care competently.

> *"Just recently they had a 72 year old fall off a ladder in (rural town) while I wasn't there, and she had a potts fracture and the crew decided they could manage it by themselves but they didn't...a72 year old off a ladder and they didn't do spinal assessment. So part of it is the education...they do really need to be backed up on probably most cases."* (Rural paramedic 'RESP' model)

A good example of what can happen in an isolated area without good volunteer training is apparent in one paramedic's comments on volunteer management of snakebite. This incident was shortly after a paramedic appointment to the area. Previously volunteers had little formal training.

> *"I found that they [ambulance volunteers] do not have the clinical education to be making the decision. That actually bit the bullet when my [rural town] volunteers when out to a brown snake bite, and because they looked at the patient and decided the patient looked ok, they loaded him for the trip down the hill, which is forty five minutes. The patient started to deteriorate on the way down the hill and it was only then they thought…perhaps we should have some backup!"* (Rural Paramedic, 'RESP' model)

5.5.2 Peer contact

Although there is regular contact with ambulance volunteers, I found that rural paramedics miss the professional contact with their own paramedic colleagues. This finding is consistent with that of allied health professionals in Australia (Hegney 1996: 6-7; Battye and McTaggart 2003). Two rural paramedics talked of how placement on an urban roster for short periods was one way to gain contact with paramedic peers.

> *"While I was in [rural town] one of the things they did for a while was to get us rostered back in town periodically to work with another paramedic. You interacted between two paramedics rather than a volunteer all the time."* (Rural Paramedic, 'Sufficing' model)

> *"So it [rural town] was a bit more isolated. One of the things they did, as training for us was to roster us occasionally, a block, with another paramedic working in [urban town]. For me it was really good you tend to...working on your own, after a while you think to yourself "am I doing things the right way" and when you work with someone else, a peer, it makes it a lot easier than working with volunteers."* (Rural Paramedic, 'RESP' model)

I found it interesting to note that whilst urban placements were appreciated by these particular rural paramedics the cited episodes are from the past and such events are now rare, unless on request of the rural paramedic. There is evidence however, that individual paramedics are seeking ways to establish their own professional peer contact, and two RESP paramedics in adjoining

areas will meet each other on a regular basis in order for clinical update and support.

> *"When we are both feeling rusty we ring each other up and say do you want to meet for the day and we will meet for one, maybe two days going over CPGs [clinical guidelines], looking at research, that sort of stuff."* (Rural Paramedic, 'RESP' model)

With little peer contact from within their profession, the inter-professional approach in a rural environment becomes important, allowing differing professions to act as health care 'peers'. This is recognized in other heath care disciplines, for example one model for Allied Health Practitioners in rural Australia cites integration with other service providers, and provides opportunities to co-locate with these other providers (Battye and McTaggart 2003).

5.5.3 Community networking

Because of isolation from other communities, rural paramedics establish networks both within and beyond their own communities in order to remain in touch with and assist the needs of local communities.

The concept of being able to network outside of the rural community is illustrated well with one 'RESP' paramedic who chose to undertake a

management course in order to help working relationships with the ambulance volunteer group. This course was available by distance education, and the paramedic gained further insight to group management techniques by communicating with other course participants and establishment of on line discussions sessions.

> *"There was a network of people who were doing the same course who I could go to, and, you know, hop on the email and discuss a situation down here. You know...so and so doesn't like so and so, wants to be the boss of such and such, if you were managing this in a group how would you go about managing this? How do you think you would approach them? I had a support network around me that was outside the ambulance service, and a lot of them working with volunteer groups, that sort of stuff."* (Rural paramedic, 'RESP' model)

Networking has the ability to extend beyond helping the paramedic manage individual roles and can provide general community benefits. Evidence is that networking by paramedics can be a driving force to help establish health funding from both within the community, and external sources. In Tasmania the Break 'O Day Regional Health Association (BODRHA) was established with dedicated assistance from the local paramedic. In Mallacoota, a Victorian State Government initiative for Transforming Rural Urgent Care (TrUCS) was responsible for the evolution of the Paramedic Community Support Coordinator (PCSC) in the region. Now the PCSC is involved in a local committee to reform the TrUCS committee with the purpose of establishing an emergency holding bay for critical patients.

5.5.4 A highly visible community member

> *"You put yourself in a car with paramedic on it; you cannot go anywhere nor do anything. Then on your days off you are still driving the service car, they know where you are all the time."*
> (Rural paramedic, 'RESP' model)

Whereas urban paramedics are able to complete each shift and remain relatively anonymous in their respective community, the community approach adopted by rural paramedics means that a large proportion of community members are aware of whom the paramedic is. This is especially so considering that in each rural location there are usually only one or two permanent rural paramedics. This community awareness is consistent with other rural health workers, where because of such, a sense of lack of control of personal life can be a major problem (Hegney 1996: 3-8), and there exists close scrutiny on personal behaviour (Dalton, Butwell et al. 2002). Some health workers even state that they face being ostracized from a rural community, or at least have a sense of such, they must "face their mistakes in the street" (Allan, Ball et al. 2008), or even go to the extent of leaving a rural community should practice mistakes occur (Kornelsen and Grzybowski 2008).

There is an added depth to the visibility of the paramedic in a rural community, and this is the use of an ambulance vehicle. A common characteristic among rural paramedics is that they will inevitably be using an ambulance vehicle during non-rostered hours for the purpose of on call

arrangements or as part of an employment package. As the above quote implies, the use of this vehicle means that the rural paramedic is at all times highly visible within the community. Even when not using an ambulance vehicle rural paramedics find that the only way to escape the paramedic role totally is to depart the town itself. This is difficult to achieve when permanent officers will usually be living in the communities they serve. Rural paramedics with a family can find this particularly challenging, as the family also becomes a highly visible unit within a rural community.

> *"We are looking at issues of a 16 year old son who doesn't want to be there going into year 11 and 12. I've got a partner who has gone back on the tools after 15 years, he has been used to doing major industrial work, so he has taken a step back 15 years, and in the long term for us that's not sustainable. People think I have dragged them up here."* (Rural paramedic 'RESP' model)

High visibility can also transfer to high demand, and all rural paramedics reported having to put in a proportion of work outside of normal roster hours. This included training of volunteers as previously discussed, but also appeared with patients sometimes reporting to the paramedic's home rather than presenting to hospital.

> *"Five days on two days off, but if I'm in the community I will respond if they need me, so it's 24 hours a day 7 days a week! ...No call…but a lot of recall!"* (Rural Paramedic, 'RESP' model)

This willingness to present directly to the paramedic suggests the respect community members have for the skills of rural paramedics. This is a feature further supported by other health workers, who will call the paramedic to assist in critical care at the hospital itself. This finding is consistent with the 'RESP' model as revealed in the study commissioned by the Australian Council of Ambulance Authorities (O'Meara, Walker et al. 2006), but also, my findings add to this in that it is consistent across the rural 'Sufficing' model.

> *"All critical patients who are being flown out they call the paramedic out to assist with packaging the patient, and sometimes the patient is delivered there in the rawest state so they need the whole box and dice, intubation etc, prior to the aircraft retrieval ream coming in."* (Rural Paramedic, 'RESP' model)

> *"What else have I done….the most dramatic stuff is when the air ambulance arrived I intubated the patient [said with pride]. I've forgotten which one it was he said I'll set up and you intubate ...everyone said "[name deleted] is going to intubate" "[expletive deleted] I can't fail"* (Rural Paramedic, 'Sufficing' model)

5.5.5 Accommodation in isolated regions

The issue of suitable accommodation is one area that keeps appearing in comments regarding working in isolated communities. This can range from lack of availability to what is available being unsuitable.

Accommodation provided by ambulance services is frequently not up to the standard officers require for themselves and their family for the long term. A main problem is that relief paramedics usually utilize this type of housing and because they only stay for short periods, there is little regard for ongoing maintenance. Comments from several rural paramedics regarded the poor state of service accommodation.

> *"I have [Paramedic] been doing the house up. It is the pits. It is the ambulance services. No one looked after it much the last person who was in there had dogs and cats and they messed [expletives deleted] everywhere and poor old [name deleted – superintendent] is running out of money. I said to him, ok I can live there if you thoroughly steam clean the carpet…it turned out worse than that so I went back and said sorry, the original carpet is still there."* (Rural Paramedic, 'Sufficing' model)

There can be a bright side to such a story:

> *"I got a new carpet and new kitchen." (Rural Paramedic, 'Sufficing' model)*

Even so, it is common for solutions to evolve very slowly. The example below of heating problems appears in an essential maintenance report that took several months to action, with other problems such as windows not sealing correctly, and mould on walls having no resolution.

> *"At the present time the house is extremely cold, meaning that the occupants are constantly cold and some rooms cannot be utilised because there is no heat penetration from the single heater in the lounge room. The current heater is not thermostatically controlled and does not have a timer." (Eastham* M 2007)

For those paramedics who decide to rent a home in a rural community the choices of housing may be limited, and for those newly appointed to the position the purchase of a home may be a reluctant decision due to the uncertainty of how the rural appointment will suit.

> *"There are all sorts of issues with housing and accommodation up there. When I went up there I could not find a place to rent, I had to buy a place for the two-year term. All sorts of issues the services need to look at to make these places attractive, attainable, not a jail sentence."* (Rural paramedic, 'RESP' model)

> *"They do have a relief house but it keeps on changing because the rentals are so hard to find that people keep renting their houses out, and go away and come back and want them back again. A relief house is for a reliever and not for the paramedic that is up there. So I actually lived in the relief house while looking for a property and eventually threw my hands up and had to buy something, because if I bring the kids up to any of these rental properties they will want to go and turn round and go straight back to the city."* (Rural Paramedic, 'RESP' model)

There is some weight in what the paramedics mentioned regarding suitable accommodation given that the same issue appears with other rural health care disciplines. Proposed solutions for encouraging Allied Health Practitioners to work in rural Australia included accommodation related conditions such as

ongoing housing subsidies, assistance with relocation expenses, childcare subsidies, and use of local networks for partners (Battye and McTaggart 2003: 11).

5.5.6 Summary

Whereas urban paramedics have ready availability to resources, rural paramedics are different in that they experience relative isolation, in not only an environmental sense but also a professional sense. Isolation for rural paramedics influences the management of emergency care, peer contact, and obtaining suitable accommodation. As a result, there is a need to create health care networks, establish, and maintain high visibility within the community.

For rural paramedics emergency work within an isolated area will involve the ability to manage in many different circumstances in which they are the primary experts in pre-hospital care. There is a concern with advanced critical care but despite this concern, there seems to be an inequity in actual practice when compared to urban paramedics. In order to provide a diverse range of emergency care in a rural environment, rural paramedics are responsible for the maintenance of a competent ambulance volunteer workforce.

Although there is regular contact with ambulance volunteers, paramedics miss the professional contact with their own paramedic colleagues. There are ways in which to help stimulate peer contact, and some rural paramedics

demonstrate this by communicating with each other and arranging their own professional contact. This shows ability and willingness to create networks within their own profession.

This networking extends beyond the paramedics' own profession in order to remain in touch with and assist the needs of local communities. Through this networking, rural paramedics have been involved in the establishment of community health centres, and local health care decision-making.

With the emergency care role and the willingness to network rural paramedics are highly visible members of the local community. Magnification of this visibility occurs as paramedics will be using an ambulance vehicle at most times. This high visibility creates high demand, and all rural paramedics report having to put in a proportion of work outside of normal roster hours. Community members will present to the paramedic at their own home, but also, because other health workers develop a high respect for the paramedic, they will call the paramedic to assist in critical care at the hospital itself.

Finally, accommodation in isolated regions can be a hurdle for rural paramedics. Ambulance provided accommodation is often unsuitable for long-term placement, and there can be difficulties in obtaining rental or purchase accommodation.

5.6 Continuing professional development

The most passionate and unified response from both rural and urban paramedics during interviews was when discussing the issue of continuing professional development. For paramedics the concept of continuing professional development covered a large area, including ongoing update of current knowledge and practice, professional development in new areas, and ongoing clinical update. In all cases, paramedics expressed dissatisfaction with access to appropriate continuing professional development once they had gained their paramedic qualification.

Whilst the case study sites examined have in place formal continuing education programs there is room for improvement. According to both the urban and rural paramedics, a missing part in continuing education is clinical supervision, and paramedics feel that the onus is on them to arrange continuing education. Where ambulance organizations conduct continuing education programs they are often irrelevant to what the paramedics want in relation to their own practice, and lack any form of assessment. There is also concern by the paramedics that continuing education needs to be current, with any new information disseminated to staff as soon as is possible.

5.6.1 Delivery of continuing professional development

The main concern with continuing professional development is that it simply does not eventuate; this is despite both Victoria and Tasmania having formal continuing education programs. In Victoria, this is in the format of in Service Continuing Education Programs (ISCEP) every six months, and in Tasmania, planned 12 monthly professional development sessions for all staff.

Staff shortages are to blame in some cases, with rural paramedics claiming that planning of education sessions will take place but it is often the case that in practice relief staffing is not available to allow rural paramedics to attend.

> *"I do not know if it (continuing education) would happen too much these days because they just do not have the staff to do that sort of thing."* (Rural Paramedic 'Community/Volunteer' model)

Even so, staff shortages are not always to blame, and although there is planning to conduct continuing education sessions, in practice they do not always occur.

> *"With general [paramedic] practice there was an agreement with the ambulance service we would have a minimum of four weeks a year down in a larger centre on an intensive care paramedic unit to maintain our skills. Both of us have fought tooth and nail to have that period for relief, and, [name deleted] only got it when he said he was going to quit! I still haven't had mine and it is not planned for any time soon."* (Rural Paramedic, 'RESP' model)

> *"Continuing education as a paramedic has been non existent. I have observed paramedics who have gone over 8 years without any continuing education."* (Urban Paramedic)

> *"The last time I did a paramedic reaccreditation course was in 1989….which is (expletive removed) poor since it is 2007 now."* (Rural Paramedic, 'Community/Volunteer' model)

> *"I never did an ALS (intensive care) refresher, because they stopped doing them a couple of years after I qualified, and there has been really nothing since down here. It's really all over the shot, I mean nobody really got anything done at all, I mean nobody!"* (Urban Paramedic)

Particularly important when considering delivery of continuing professional development, are concerns with new areas of practice, and there were suggestions that continuing education sessions need consistent dissemination to all staff. Urban paramedics commented on how sometimes information is presented differently to separate groups, or may change in the time it takes for the first group to commence and the last group to complete a new program.

> *"Every time you go through, each group gets a new type of information, so it is not current. It might be current but not necessarily the right sort of information, you might miss, this group might miss information the next group gets, that might be useful information."* (Urban Paramedic)

The message here is that new information should be disseminated to all paramedics when it is current, not only those involved in a particular professional development group.

5.6.2 Design of continuing professional development programs

Where formal continuing professional development occurred with ambulance organizations, there was a consistent theme of continuing education being irrelevant to specific practice of both urban and rural paramedics. Over one three-day professional development course for example, two days were for driver training assessment. The concern of the paramedics was that driver training, a skill used every day in practice, was given priority over clinical information, such as recently introduced pharmacology and clinical practice guidelines. The paramedics in this study expressed a desire for continuing education that directly relates to their level of clinical practice.

> *"Need specific continuing education programs. Difficult to hold intensive care stuff with non intensive care people present. Different skills levels require different programs."* (Urban Paramedic)

> *"They started doing professional development a couple of years ago, got in the course, it was good….not hugely…it focused on what's out there, what's new, what can help you in doing your job, it didn't focus on where are you as a paramedic, are you up to scratch, do you really know what you need to know."* (Urban Paramedic)

Rural Paramedics in particular are concerned they have no direct input into the design of relevant continuing professional development programs.

> *"The new paramedic refreshers. Who had a say in the design of these? Rural paramedics should have some say in what goes into the design of refresher courses. I had to push to get onto a refresher course. The assumption was that I was a good paramedic and did not need one."* (Rural Paramedic, 'RESP' model)

> *"Perhaps need to be more open, more refreshers. There is no ongoing education unless you are self motivated. Our refresher consists of a bit of driving (why) and some maternity don't know what else."* (Rural Paramedic, 'Sufficing' model)

Content and assessment are main areas of concern and I found that urban paramedics in particular are concerned there is currently no assessment of standard practice.

> *"How do we, how does the service know that we are practicing at the required standard for a paramedic?"* (Urban Paramedic)

> *"In Service Continuing Education Programs (ISCEPs) need assessment. Still have no idea where people are up to. Currently there are also learning confirmation packages that are signed off but assessment is still lacking."* (Urban Paramedic)

For the paramedics in this study, ‘on road’ clinical support is a missing link in the facilitation of continuing professional development. This is disturbing as this aspect of clinical support is important to ensure a mechanism for feedback and correct practice, and is indeed recognized in the delivery of training and continuing education for extended care paramedics in the United Kingdom (Woollard 2006).

> *“Need CSOs (clinical specialists) off the roster to help with reaccreditations. They need functional time to be able to manage education.”* (Urban Paramedic)

> *“CSOs do the mandatory clinical audits, your cat 1s, those sort of things, apart from those there is nothing else, at the moment they just can’t manage it. Just the caseload (on road response), they just do not have time.”* (Urban Paramedic)

An example of the missing link of clinical supervision comes from the Tasmanian urban case study site where a change in clinical practice guidelines saw the design and implementation of an on line examination process, supported by classroom education. On completion of the process, paramedics could practice the new guidelines. What was missing from the process was in field assessment or guidance to ensure paramedics were confident with practice of the new guidelines. Clinical assessment of the use of new guidelines was only by retrospective case audit. This is despite the findings of a review into ambulance services in Tasmania in 1994, which recognized inadequacies of retrospective case audit, again being re-iterated in

a 2003 report to Government (Joint Standing Committee On Community Development 2003pp. 16-17).

Whereas clinical support is an important part of facilitation of continuing professional development, there is also recognition by paramedics, that professional development may require some form of individual contribution. This is the premise behind moves by the Australian College of Ambulance Professionals (ACAP) to introduce a Certified Ambulance Professional Program (Australian College of Ambulance Professionals December 2007), and whilst there was no evidence of any paramedic in this study participating in the ACAP program, paramedics did feel they had to follow up their own continuing education.

> *"I contact the [city] hospital emergency department and talk to the Director [of medicine] there about stuff, but that is stuff I initiate off my own back."* (Rural Paramedic, 'RESP' model)

> *"Once you are a qualified paramedic it's all over the place [continuing education]. The superintendent has said to me that once you are at a certain level you have got to chase your own training."* (Rural Paramedic, 'Sufficing' model)

5.6.3 Summary

The very clear message from both urban and rural paramedics concerning continuing professional development was that there is a need for improvement. For the paramedics in this study, 'on road' clinical support was a missing link in the facilitation of continuing education, although there was

also a realization that some form of individual contribution was also a necessary part of continuing education. There are some formal continuing education programs within ambulance organizations; however, there is also a consistent theme of continuing professional development being irrelevant to specific practice of both urban and rural paramedics. Paramedics wish to have more input to the design of continuing education programs.

Some professional development involves new areas of practice, and with introduction of these new areas, education sessions need consistent dissemination to all staff in order to ensure the distribution of the same message to all paramedics in a timely fashion. Above all, there is concern from both rural and urban paramedics that continuing professional development simply does not eventuate; this is despite both Victoria and Tasmania having formal continuing professional development programs.

5.7 Summary – a comparison of rural and urban paramedic practice

The purpose of this chapter has been to address the research questions:

1. How does the practice of rural paramedics compare with that of urban paramedics?

2. How does the practice of rural paramedics compare across different local approaches?

The case studies found that differences between rural and urban paramedic practice present in four main ways. Rural paramedics:

1. practice a community response rather than a case dispatch response,
2. are multidisciplinary team members rather than solely ambulance team members,
3. are educators and managers of volunteers rather than clinical supervisors, and
4. are isolated health workers rather than having availability to full resources.

With a whole of community response, rural paramedics are involved as community educators, and primary health care practitioners. They also use innovative methods in community practice, are involved in other community services, and become part of a community social fabric. Rather than a whole of community approach, urban paramedics are concerned with the types of cases attended, and specifically these include the mental health, chronic care, and social types of cases that urban paramedics feel deserve further attention in paramedic education and training.

Rural paramedics have a comprehensive inter-professional approach to health care in the community. They are involved in some form of community health organization outside of the ambulance service, and this approach creates an

awareness of the role of the paramedic, and willingness of other health professionals to tap into the clinical expertise of the paramedic. Inter-professional awareness does not just 'happen' and rural paramedics work to foster relationships between different health professionals. Both urban and rural paramedics suggest that a future may lie in an extended scope of practice with paramedics working side by side with other health professionals in multi purpose health care clinics.

Ambulance volunteer management and training is an important role for rural paramedics. This does seem to be an evolutionary process from volunteer training to volunteer management when progressing from the 'Sufficing' model to the 'RESP' model; however, the differences between models is cloudy, as some aspects of management such as volunteer recruitment are present in both. In both models, involvement with volunteers is so important that rural paramedics will contribute their own time in order to provide such to ambulance volunteers in their rural localities. The main difference with urban paramedics is that rather than being an educator and manager to ambulance volunteers, the urban role becomes one of a clinical supervisor for paramedic students. The supervision role will become more significant with increasing demands due to growing numbers of paramedic students. Rural paramedics state little experience with paramedic students in their rural localities.

Whereas urban paramedics have ready access to resources, rural paramedics experience relative isolation in both an environmental and a professional sense. The isolation of rural paramedics occurs in several ways, one of which is management of emergency care, where the paramedic is the primary expert in provision of pre-hospital care in the rural environment. Because of this, rural paramedics are concerned with the ability to practice advanced critical emergency care.

This advanced critical care occurs in an environment in which rural paramedics have little contact with peers from within their own profession; however, there is evidence that rural paramedics will create networks among rural health professionals to enhance their own professional ability as well as the overall health care for a rural community.

With the emergency care role, and the willingness to network, rural paramedics are highly visible members of the local community. Magnification of this visibility occurs with the realization that paramedics will be using an ambulance vehicle at most times. High visibility creates high demand, and all rural paramedics report having to put in a proportion of work outside of normal roster hours.

A further difference between rural paramedics and urban paramedics is one of fundamental basic needs. Accommodation in isolated regions can be a hurdle

for rural paramedics. Ambulance provided accommodation is often unsuitable for long-term placement, and there can be difficulties in obtaining rental or purchase accommodation.

Finally, a very clear message from both urban and rural paramedics concerns continuing professional development, and that there is need for further development in this area. Provision of continuing education programs is by ambulance organizations should be relevant to practice, and consider input from all paramedics. Design of continuing professional development programs should be specific to the needs of different paramedic groups.

Chapter 6
Discussion - informing education and training for specialty rural paramedic practice

6.1 Introduction

Chapter Five compared rural and urban paramedic practice. This chapter discusses how the comparison of rural and urban paramedic practice informs the education and training needs for specialty rural paramedic practice.

I begin by comparing the roles of rural paramedics with definitions of rural medicine and rural health as rural specialties. I argue that the roles of rural paramedics are deserving of individual attention as a distinct rural speciality. A community response will require education and training with a community based aspect. Being an inter-professional team member will benefit from participation in learning activities conducted in an inter-professional environment. In order to educate and manage volunteers, rural paramedics need to know how to achieve this. Finally, the specialized nature of an isolated rural environment will influence the not only initial education and training but the delivery of on going education and training for rural paramedics.

I next consider aspects important to education and training for rural paramedics. Firstly, is that the Case Based Learning methods used in

ambulance education are well suited to the education and training of rural paramedics. Then, I discuss education and training of rural paramedics on the three levels of undergraduate, postgraduate, and continuing professional development.

6.2 Recognition of a rural specialty

The previous chapter identified differences between the roles of rural paramedics and urban paramedics across two states of Australia, finding that rural paramedics practice a community response, are multidisciplinary team members, are involved in the education and management of ambulance volunteers, and are isolated both geographically and professionally. Considering these rural practices, and turning to examples from other health care disciplines with established rural specialties, I suggest similar specialty practice for rural paramedics.

Other health care disciplines in Australia have embraced the idea that within their professions is a specialized arm known as ‘rural health’. In nursing, legislation has formalized the recognition of the rural and remote nurse practitioner (Sullivan, Dachelet et al. 1978: 973; Roberts 1996: 174; McCann and Baker 2002: 176; Plager, Conger et al. 2003: 407; Usher and Lindsay 2003: 84; Bagg 2004: 4). Within medicine, there has been considerable examination in Australia to determine whether rural medicine is a distinct discipline. As previously mentioned (p. 46), cited in some literature (Wronski

2003: 161; Smith and Hays 2004: 68) is an article by Strasser (1995) in which are raised four criteria by which to determine whether rural medicine is a separate discipline.

1. *Formation of an academic body representing the discipline*
2. *Presence of an intellectually rigorous training program*
3. *Emergence of a unique literature*
4. *Recognition from outside the discipline*

Regardless of whether medicine is a rural discipline or simply a rural speciality the same criteria are useful to apply to the practice of rural paramedics. Whilst there is no singular academic body representing a rural paramedic speciality there is recognition of rural paramedic practice in Australia through the Council of Ambulance Authorities (CAA). This organization has been involved with the promotion of research into the roles of rural paramedics (O'Meara, Walker et al. 2006), and participates in the International Roundtable on Community Paramedicine (IRCP) (International roundtable on community paramedicine 2009) which is a forum dedicated to the future of rural paramedic practice worldwide.

Development of a postgraduate certificate in rural and remote paramedical practice through James Cook University in Queensland supports the second point in Strasser's criteria, that of an intellectually rigorous training program.

This current course however, is still heavily reliant on a remote area nursing course rather than being a totally independent rural paramedic course.

Addressing the third of Strasser's criteria is that within Australia there is a unique body of literature emerging concerning the roles of rural paramedics (O'Meara 2001; O'Meara, Burley et al. 2002; O'Meara and Strasser 2002; O'Meara 2002; Ansari, Henderson et al. 2003; O'Meara 2003a; O'Meara 2003b; O'Meara, Kendall et al. 2004; O'Meara 2005; O'Meara, Walker et al. 2006; Raven, Tippett et al. 2006; Stirling, O'Meara et al. 2007; Reeve, Pashen et al. 2008). Further, there is also evidence of recognition from outside the discipline, with rural paramedic representation at several national and international health discipline conferences (Mulholland 2006; O'Meara, Walker et al. 2006; Mulholland 2007; O'Meara, Walker et al. 2007; Raven, Tippet et al. 2007; Blacker, Pearson et al. 2009; Mulholland, Stirling et al. 2009).

Further support of rural paramedics practicing within a distinct speciality comes with comparison to the definition of the discipline of remote health practice used in the opening of this thesis. The definition offered by Wakerman (2004) follows a comprehensive review involving 55 citations and 9 web sites in Australia, the UK, Canada, New Zealand, and the United States:

> "*Remote Health is an emerging discipline with distinct sociological, historical and practice characteristics. Its*

> *practice in Australia is characterized by geographical professional, and often, sociological isolation of practitioners; a strong multidisciplinary approach; overlapping and changing roles of team members; a relatively high degree of GP substitution; and practitioners requiring public health, emergency and extended clinical skills." (Wakerman 2004: 213)*

Findings are consistent with several aspects of the definition of remote health offered by Wakerman (2004: 213). Rural paramedics are isolated practitioners, there is a strong multidisciplinary approach, some roles overlap with paramedics helping in the rural hospital, and there is a very strong presence of primary health care in addition to the emergency care role of paramedics.

Finally, the definition of rural medicine as used by the Australian College of Rural and Remote Medicine (ACRRM) is also consistent with my results. This College has been set up to support, train, and represent the medical profession to improve health services in rural and remote communities. The Australian College of Rural and Remote Medicine definition of rural medicine includes such themes as cross-disciplinary investigation, practitioners who have the ability to be independent, self reliant, multi skilled, as well as being strong leaders and team builders who are aware of particular community needs, and socio cultural contexts (Australian College of Rural and Remote Medicine 2009). Such themes parallel with my own results showing rural paramedics to be multidisciplinary team members, with a

strong community focus, possessing the abilities to manage and educate teams of ambulance volunteers.

Results presented in Chapter Five indicate differences between rural paramedic practice and urban paramedic practice, and as such, there is an implication that specific education and training for rural paramedics is a valid proposal. The need for education and training specific for rural paramedics becomes more significant when comparing my results with definitions offering rural and remote health as distinct and emerging specialties. In line with one definition of rural medicine as a speciality, there is organizational support for recognition of rural paramedics, with an emerging body of rural specific literature, development of postgraduate education with a rural focus, and recognition of rural paramedics from beyond the paramedic discipline. Other definitions of rural and remote health care practice as a distinct speciality are in parallel with my case study findings. Aspects such as a multidisciplinary approach, a strong community focus, a team leader, and an isolated health care worker are in common both with other rural disciplines and with the rural paramedics of my study.

6.3 Education and training for rural paramedics

Having argued that these data suggest the need for recognition of a paramedic rural specialty this section expands on the concepts of a rural specialty and

explores how the comparison of rural and urban paramedic practice can inform education and training of rural paramedics.

The section begins by looking at current education and training for paramedics and finds that the Case Based Learning and clinical placements currently adopted for general paramedic education and training are suitable for rural paramedic education. With the potential for rural specific education established, discussion develops around the importance of having the cooperation of ambulance organizations in order that any education and training proposals are to succeed.

I then discuss education and training for rural paramedics on the three levels of undergraduate, postgraduate, and continuing education. With the undergraduate, in addition to suggestions of rural clinical placements and specific rural recruitment, I reference the chronic, social, and mental health care mentioned by urban paramedics. Postgraduate education needs to consider those activities specific to rural paramedics and these include being able to work within a multidisciplinary team, to work with volunteers, to project build, use local media, and act as an advisor within the community. Finally, continuing education as an important way in which rural paramedics maintain professionalism must include consideration of rural paramedics as isolated health care workers.

6.3.1 Suitability of current education and training for rural practice

Following suggestions that the role of rural paramedics is deserving of recognition as a unique paramedic specialty, I now discuss how education and training for rural paramedics is possible within the existing framework of paramedic education and training. The Case Based Learning approach, and use of clinical placement adopted in paramedic education is well suited to the acute care, and ambulance team approach of urban paramedics, and appears at each level of undergraduate, postgraduate, and continuing education. My findings show that rural paramedics display differences in practice to urban paramedics, and whilst there is currently limited 'rural specific', education and training for paramedics, the approaches used in urban education and training can be adapted to a rural focus. These approaches lend themselves to the multidisciplinary team approach of rural paramedics, the creation of rural case 'scenarios' to aid in community based health care, and heightened awareness of working in an isolated environment by use of rural clinical placement.

Current education and training for paramedics in Australia caters for acute situations at the undergraduate and postgraduate levels. Case audit data show that both urban and rural paramedics need to be prepared to attend cases such as breathing problems, cardiac problems (including cardiac arrest), falls, abdominal conditions, unconscious or fainting patients, and road accidents (Appendices K, L, M & N). Training for these conditions is evident in the

topics of study presented at both undergraduate and postgraduate levels (Appendices P, Q & R). Continuing education programs such as the internet based update of new practice guidelines in Tasmania (Tasmanian Ambulance Service 2009a), and the In Service Continuing Education Programs (ISCEP) in Victoria (Rural Ambulance Victoria 2009), also have elements that serve to update current acute care knowledge.

An important part of the learning process in this acute care system is the emphasis on an ambulance teams approach. The type of education to achieve this end, and used in the sites examined in my research is that of Case Based Learning (CBL) which has evolved from that of Problem Based Learning (PBL). The concept of PBL includes high fidelity competency, identification of self-analysis, clear clinical decision-making and problem solving in abnormal circumstances. There is a focus on being able to work effectively as part of a team. Case Based Learning adopts the same principles and presents a case or problem in order to stimulate the acquirement of knowledge skills and attitudes (Williams 2004).

A good example of CBL is the use of simulation, which is used in the case study sites I have chosen to examine. Both Tasmania and Victoria have established simulation centers designed to create a realistic setting for paramedic students to practice the acute care skills and paramedic teamwork required in the management of patient care. The concept is that use of case

simulation will reinforce clinical concepts and support clinical practice in non threatening environments (Boyle, Williams et al. 2007: 855).

The use of CBL does not necessarily mean a 'hands on' approach is essential, and education can be remote to the classroom situation. A further example of CBL is the use of internet resources to deliver training remote to the classroom situation. Typically, scenarios present to students who then develop clinically sound solutions to these scenarios (Williams 2006). These type of internet resources are available not only to undergraduate students but are now being utilized for continuing education of qualified officers (White, Corbett et al. 2006). One innovative approach being trialled by various paramedic educational institutions is making traditional style lectures available for downloading onto various media devices for review at any time (White and Bryant-King 2008; Williams and Bearman 2008).

Demonstration of the capacity for this type of education for rural paramedics appears both overseas and in Australia. Relating to my findings of inter-professional rural roles an inter-professional approach in paramedic education makes use of differing rural disciplines to present case examples and illustrate ways in which each discipline is able to contribute to health care in both the United States and in the United Kingdom (Garza 1994b: 75-76; Geller, Rhyne et al. 2002: 43-45; Mason, Wardrope et al. 2003; Kilner 2004b: 383-384; Snooks, Kearsley et al. 2005: 436). Within Australia, a graduate certificate in

remote paramedic practice also adopts an inter-professional approach, and using Case Based Learning students have the opportunity to develop projects within their given communities in order to help meet community health needs (Reeve, Pashen et al. 2008: 371, 373). The aspect of being within given communities is particularly relevant as it also demonstrates the importance of clinical placement in rural areas.

Although the use of education via resources such as the internet is in their infancy for rural paramedics, examples from other rural disciplines illustrate future possibilities to work around the professional isolation experienced in the rural environment. These include video and audio conferencing, the internet, and computer simulations (Delaney, Lim et al. 2002). This use of telehealth has received favorable responses from participants (Faulkner and McClelland 2002)Smith, Bensink et al. 2005, p286-292; (Yadav and Lin 2001). One Australia wide remote education facility for rural health workers is the Rural Heath Education Foundation (RHEF) which provides health education via the internet, satellite, and DVD facilities (Rural Health Education Foundation 2008).

6.3.1.1 Summary

Given these study findings that rural paramedics practice a community-based response, operate within a multidisciplinary team, are managers of volunteers, and are isolated health care workers, the methods of CBL and clinical

placement are well suited to specific education for rural paramedics. The use of CBL to deliver various rural ‘scenarios’ to paramedic students would be similar to the delivery of various acute scenarios. These same case based scenarios lend themselves to multidisciplinary participation, and can extend to include management of an ambulance volunteer workforce. Experience of the isolation and unique working environment of rural paramedics can occur given the opportunity for rural clinical placement. Delivery of educational sessions to isolated areas can make use of techniques external to the classroom such as internet or downloading of lectures.

6.3.2 Undergraduate education

In the previous section I have discussed how the differences in rural and urban paramedic practice inform rural education and training with an awareness that current education and training for paramedics can be suitably adapted for rural paramedics.. In this section the relevance of the study findings are linked to the first level of education and training for rural paramedics, that of undergraduate education.

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6.3.2.1 Clinical placement for undergraduates

Clinical placement has the ability to create within undergraduate paramedics an understanding of the rural role by allowing direct experience of the rural

health care environment whilst under the guidance of experienced paramedics. Given the study findings, that none of the rural paramedics in this study has experience with undergraduate students undertaking clinical placement this is an important consideration in the education process. In other health care disciplines we see favorable responses in relation to the undertaking of rural clinical placements (McAllister, McEwan et al. 1998: 196-6; Armitage and McMaster 2000; Talbot and Ward 2000: 18-20; Worley, Silagy et al. 2000; Taylor, Blue et al. 2001: 306-310; Andersson, Lennox et al. 2003: 62-5; Worley, Esterman et al. 2004: 208-209; Worley, Martin et al. 2008: 178). There is also reason to suggest that rural clinical placement will impart an awareness not only of the high regard of paramedics in a rural community, but also the peculiarities of a rural lifestyle, and this can range from difficulties in finding accommodation to the close personal scrutiny experienced in a rural environment. As Australian nursing students have found during rural placement, a rural lifestyle goes hand in hand with a relative lack of anonymity (Hegney 1996; Dalton, Butwell et al. 2002), a finding not dissimilar to rural paramedics.

One aspect to consider with rural clinical placement is the optimal period that should be involved for there is still lack of consensus in this regard. In medicine, placements of up to one year are possibly more optimal that shorter ones of six weeks (Denz-Penhey, Murdoch et al. 2004), the same authors also suggest that short placements do not instill the sense of community that is so

important to rural health care (Denz-Penhey, Shannon et al. 2005). Similarly, Worley, Martin et al. (2008) find that medical students undertaking rural clinical placements of one year are more likely to choose a rural career after graduation (pp. 177-178). Conversely, a shorter rural placement of up to six weeks has correlated to taking up rural practice (Playford, Larson et al. 2006; Dalton, Routley et al. 2008). One advantage of this is that short placements minimize student displacement from family, friends, and established social life (Playford, Larson et al. 2006).

Ascertaining appropriate time for rural clinical placements within current paramedic degree courses needs to be the subject of further investigation, as would be the finding of available time within an undergraduate curriculum for rural clinical placement. The average number of hours spent in clinical placements over the period of pre-employment paramedic bachelor degrees is 600 hours (Appendix S) and this is necessary for the student to gain exposure to the acute care mentioned in my own findings. Ambulance organizations are facing situations whereby growing numbers of undergraduates requiring clinical placement is placing extra demand on provision of places and suitable mentors (O'Meara, Brightwell et al. 20th Feb 2007: 3; Queensland Ambulance Service December 2006: 3-4).

Given the increasing difficulties in finding clinical placements for undergraduate paramedics, rural clinical placement may offer advantages for

paramedic education and training in general. Given the study findings, that none of the rural paramedics in this study has experience with undergraduate students undertaking clinical placement, one of these advantages is the utilization of rural clinical placement as an elective alternative to urban placement. We see this in other health care disciplines. Naturally there has been some apprehension, particularly among medical students, that rural placement may be a detriment to their learning process, however these fears have been unfounded (Kamien 1996: 153-158; De Witt, Migeon et al. 2001; Denz-Penhey, Murdoch et al. 2004: 4-5; Jones, DeWitt et al. 2007).

A further advantage to rural clinical placements for undergraduates is for the experienced paramedic. I have shown that rural paramedics are concerned with a lack of dissemination of new information regarding clinical practice. Perhaps, as Rogers and Dunn et al. (2008: 43) suggest, experienced health care workers, in this case paramedics, can learn from the recent education and teachings given to the undergraduate.

6.3.2.2 Previous rural experience

Clinical placements for paramedic undergraduates are one way of instilling an understanding of rural paramedic roles. A more basic premise for undergraduates can be the encouragement of students who already have experience with living in rural communities to take up paramedic studies.

In other professions, people with previous rural experience have a high incidence of undertaking a rural career (Azer, Simmons et al. 2001: 179-181; Hegney, McCarthy et al. 2002: 181; Australian Medical Workforce Advisory Committee (AMWAC) 2005: 16-18; Matsumoto, Okayama et al. 2005; Levin and Leyland 2006: 282-283). There are suggestions that previous rural exposure helps to reduce barriers such as cultural issues, geographical isolation, financial cost, health profession stereotypes, insufficient information, and obligation to family (Durey, McNamara et al. 2003). There is current direction toward the consideration of undergraduates with previous rural experience for the paramedic profession. The New South Wales Ambulance Service has made formal recognition of the benefit in recruitment of students from rural areas, offering this as a suggestion to help promote a rural paramedic career (NSW Ambulance Service 2008: 104).

6.3.2.3 Use of interactive media

Rural clinical placement and employment of undergraduates with previous rural exposure are not the only ways in which to instil an understanding of rural practice for undergraduate paramedics. These findings reveal a strong community component to the role of rural paramedics, as well as isolation from centrally based education and training. The use of interactive media such as the internet or pre-recorded information, has the ability to both deliver community based content, as well as bridge the gap created by physical isolation. This becomes even more important with proposals for

undergraduate clinical placements, in order that students are able to maintain contact with educational institutions.

Whilst warranting further investigation, this form of education is showing promise in bringing the community experienced by the paramedic to the classroom. In the United States, internet based training provides interactive video sessions covering a wide range of emergency and social situations (Mulholland and O'Meara 2006; Public Health Seattle and King County online accessed 30th November 2008). Current developments in Australian paramedic education are witnessing the use of DVD simulations concerning community members with disabilities (Williams 2008). Internet resources for presentation of clinical practice guidelines are currently in use (White, Corbett et al. 2006) as is the availability of lectures for download onto various media devices for later review (White and Bryant-King 2008; Williams and Bearman 2008). The 'community' presented by use of interactive media could well include rural components such as working in the 'field' as an independent paramedic practitioner, or in a multidisciplinary role with other health professionals.

6.3.2.4 Inter-professional education

An important aspect of these findings is that the role of rural paramedics is an inter-professional one. Whereas both urban and rural paramedics will extend pre-hospital care to work together with hospital accident and emergency staff

when required, rural paramedics exhibit a more comprehensive inter-professional approach. In all cases, rural paramedics are involved as members of some form of community health organization outside of the ambulance service. This willingness to practice outside of the 'silo' of emergency care is evident with paramedics placing themselves on local community health councils alongside physiotherapists, occupational therapists and district nurses, as well as being involved in community health promotions and educational initiatives ranging from pre-natal classes to drug and alcohol education.

Case study results indicate that rural paramedics and other health professions in rural areas will work together to achieve a common goal of provision of community health care. This goal is congruent with an accepted definition of inter-professional education:

> *"Inter-professional education occurs when two or more professions learn with, from and about each other to improve collaboration and the quality of care" (Centre for the Advancement of Interprofessional Education (CAIPE); Stone 2007: 333).*

Even so, inter-professional education in Australia is still in its infancy, leaving open a pathway for the inclusion of paramedics in its development. There is certainly support for multidisciplinary education among rural health educational organizations within Australia. The Australian Rural Health Education Network (ARHEN) is in support of strategic development for

inter-professional education, and outcomes from both the 8th and 9th National Rural Health Conferences included suggestions that State and Federal Governments inform educational institutions on the need for undergraduate inter professional education (Smith, Stone et al. 2007).

Awareness of inter-professional health care in rural Australia is developing among other health professions. Examples are the Rural Inter Professional Education (RIPE) project for third year medical and nursing students in rural Victoria (McNair, Brown et al. 2001; Stone and McNair 2003), and in Tasmania with medical, pharmacy, and nursing students (Albert, Dalton et al. 2004; Whelan, Spencer et al. 2008). Similar education and training has been trialed internationally with paramedics and medical students and benefits have been in the forms of better communication and working relationships (Hallikainen, Vaisanen et al. 2007: 372,376).

Current inter-professional education for undergraduate paramedics in general is via the completion of double degree programs with nursing, and these are offered by several Australian universities (Charles Sturt University 2008; Queensland University of Technology 2009; Monash University 2009b). Edith Cowan University in Western Australia also includes nursing subjects such as communication in nursing and assessment in nursing, as part of an undergraduate paramedic curriculum (Edith Cowan University 2009a). Whilst this is a positive step in the right direction, my results have indicated that

rural paramedics are involved with more health professions than nursing alone, and do not always see themselves in nursing roles.

Hays (2008) suggests that design of any inter-professional course should have a goal of ensuring all learners are prepared to work in multi professional teams in their future work. A key strategy is to expose learners to successful inter professional teams of people who respect each other's roles. I suggest that paramedic educators be involved in these inter professional teams as a means by which to introduce undergraduate paramedic students to inter-professional education.

One way of developing inter-professional education and training for undergraduates is to combine such with the clinical placements already discussed. One inter-professional program conducted by the University of Queensland's School of Health and Rehabilitation Sciences (UQSHRS) includes students of physiotherapy, occupational therapy, speech pathology, and audiology working and learning together in inter-professional health care clinics (Copely, Allison et al. 2007: 352). In a similar fashion, paramedic undergraduates could undertake clinical placements in not only urban or rural ambulance services, but also other health care facilities, gaining an overall perspective of health care. Other disciplines currently undertake clinical placement with ambulance services to gain and emergency care perspective, but the converse does not apply for paramedic students.

Inter-professional education and training for undergraduates can encompass more than a rural focus. Based on these findings concerning inter-professional rural paramedic roles, but also considering the urban paramedic roles of mental health, chronic, and social care, it seems likely that inter-professional undergraduate education should involve both rural and urban paramedics. This is highlighted when considering that universities currently offer subjects that address chronic and social care (Appendices P & Q) and mental health care (University of Tasmania 2008; Monash University 2008b) but that this conflicts with statements by urban paramedics who mention they are poorly equipped to manage such care. While there is limited literature on the topic, there is some support for these study findings concerning paramedics feelings about management of mental health patients. Most literature has a focus on the mental health of the paramedics rather than the patients they attend (Neely and Spitzer 1997; Clohessy and Ehlers 1999; Herron, Dean et al. 1999; Young and Cooper 1999; Alexander and Klein 2001; Van der Ploeg and Kleber 2003; Bennett, Williams et al. 2004; Jonsson and Segesten 2004; Sterud, Ekeberg et al. 2006; Ward, Lombard et al. 2006; Berger, Figueira et al. 2007). However, two articles support the comments by urban paramedics, that attendance to these cases is frequent. Richards, Bretz et al (1999) found that methamphetamine users utilize ambulance transport more than other people who present at emergency department, and, in a United States national study of ambulance transports 31% of ambulance use

was for mental health reasons. Mental health visits occupied a significant proportion of ambulance use (Larkin, Claassen et al. 2006pp. 82-90). These study findings concerning mental health care in particular are supported by Shaban (2004; 2005), who states that paramedics are poorly equipped to manage mental health care, protocols are problematic, with poor knowledge, and recognition of mental health.

Hays (2008) suggests that inter-professional education should involve more than lectures and seminars, and should involve participation with other health professionals. The use of differing professionals in undergraduate education will help provide an awareness of, and draw on the expertise of each profession, helping to avoid the poor knowledge base and lack of recognition highlighted by Shaban (2004).

6.3.2.5 Summary

My findings have shown that the role of rural paramedics is one involving a high degree of community involvement, with a strong element of inter-professional practice, yet these are missing from undergraduate paramedic education and training. By incorporating measures such as rural clinical placements, offering an inter-professional educational experience, or even encouraging students from rural backgrounds, paramedic undergraduate students will develop an early understanding of the roles of rural paramedics. Other benefits will appear for undergraduate paramedic education and

training in general, as an inter-professional approach has the ability to bring to the student an overview of important elements such as chronic, social or mental health care.

6.3.3 Postgraduate education

Undergraduate education for paramedics has the potential to create an awareness of the intricacies involved in undertaking a career as a rural paramedic, whereas postgraduate education has the ability to build upon the roles and characteristics of rural paramedics and provide rural communities a health care expert involved in much more than treatment of acute critical health problems. This study reveals that rural paramedics are heavily involved in the community, as project builders, advisors and educators to local community and other health care workers, as inter-professional practitioners and as managers of volunteers. Postgraduate education and training for rural paramedics therefore should logically encompass these aspects of practice in order to enhance the roles of rural paramedics.

Current postgraduate education for paramedics in Australia tends to focus on the aspects relating to the performance of a critical care role. The most commonly appearing postgraduate course for paramedics in Australia is that of Intensive Care Paramedic, which, in conjunction with ambulance services train paramedics to an advanced care stage (Monash University 2008a; Charles Sturt University 2009; Flinders University 2009b). Other

postgraduate courses for paramedics include aero-medical paramedic (Monash University 2009c), and graduate diploma in emergency health, designed to prepare paramedics for leadership positions (Monash University 2009d). Various Masters programs are also offered as an adjunct to leadership positions within ambulance services (Monash University 2009a; Edith Cowan University 2009b). Postgraduate opportunities also exist in research fields with Masters or Doctorate qualifications. Such research positions are not limited to advanced clinical practice.

Internationally, awareness that paramedics are exhibiting extended roles of practice beyond critical care has led to development of postgraduate studies in these extended roles, although there is some inconsistency between postgraduate courses. In the United Kingdom and the United States of America, these postgraduate studies cater to community needs in both rural and urban areas, and in an attempt to relieve the pressure on overburdened hospital systems (Shoup 1995: 46; Cooper, Barrett et al. 2004: 616-617; Squires and Mason 2004: 725-726; Woollard 2006). The types of postgraduate education provided for these extended roles can vary considerably, with some based on locally developed curricula with differing degrees of duration (Shoup 1995; Hauswald, Raynovich et al. 2005; Woollard 2006). The mixture of postgraduate courses in the UK is one reason for a call for national regulation of the paramedic profession (Whitmore and Furber 2006), and there is some support for the minimum standard for postgraduate

education relating to extended practice to be a Masters degree as it is in other health professions such as nursing (Woollard 2006). Development of rurally oriented postgraduate courses for paramedics in Australia need to be based on and learn from international experiences of extended practice.

6.3.3.1 Inter-professional and community based education

Community involvement by paramedics and inter-professional awareness are two essential elements of rural paramedic practice, there is a willingness to practice outside of the 'silo' of emergency care. Rural paramedics are involved in the provision of primary health care, this primary health care role extending to include community health centers, drug rehabilitation classes, aged and rural health care groups, and other emergency service groups such as fire and State Emergency Service (SES). Participation in these activities is by use of a comprehensive inter-professional approach with rural paramedics commonly belonging to some form of community health organization outside of the ambulance service. Paramedics place themselves on local community health councils alongside physiotherapists, occupational therapists and district nurses, as well as being involved in community health promotions and educational initiatives ranging from pre-natal classes to drug and alcohol education.

Postgraduate education and training for rural paramedics should adopt such elements, and the concepts of community involvement and an inter-

professional aspect to paramedic postgraduate education appear in recent innovative education programs for paramedics. Several international postgraduate programs dealing with extended scope of practice for paramedics have developed alongside community nursing programs (Garza 1994b: 75-76; Geller, Rhyne et al. 2002: 43-45; Mason, Wardrope et al. 2003; Kilner 2004a: 381-384; Snooks, Kearsley et al. 2005: 436). In Australia, a recent development is a formal rurally oriented postgraduate course for paramedics that has community involvement and inter-professional practice as components.

The Certificate in Remote Paramedical Practice (James Cook University 2007) is an offering by James Cook University in Queensland. The course has a inter-professional foundation in remote nursing (Raven, Tippett et al. 2006: 4) and is based on international and local research into the extended scope of practice of rural paramedics (Raven, Tippett et al. 2006; Raven, Tippet et al. 2007; Reeve, Pashen et al. 2008). The course involves paramedics completing the remote and isolated practice endorsed nursing program, as well as subjects heavily weighted toward the paramedic being a provider of primary health care within their given community (James Cook University 2007). Outcomes of the program incorporate community involvement and inter-professional awareness to see paramedics working within their rural communities in the development of collaborative strategies designed to meet community health needs (Reeve, Pashen et al. 2008: 371,373).

An important consideration with the development of such postgraduate rural courses should be that inter-professional means more than only bi-disciplinary. These findings indicate that rural paramedics work with many differing rural health professionals yet the paramedic examples cited in the preceding paragraphs show an alignment only with nursing. Medves, Paterson et al. (2008) comment on a Canadian inter-professional course to prepare various professions for a rural career. This course combined professionals such as theologians, nurses, teachers, doctors, occupational therapists, physical therapists and nurses with the aim to provide a background to what to expect from working in a rural community. Although some problems did arise from this program, such as differing assessment expectations from differing professions, Meves, Paterson et al.(2008) do suggest some value in further longitudinal studies of such programs.

Postgraduate rural education needs more than inter-professional exposure, and a common feature among all cited examples of inter-professional postgraduate rural education is that of community placement. The results of this study indicate strong community involvement by rural paramedics, and suggest that any postgraduate course aimed at rural paramedics should include the placement of students in rural locations for practical experience and development. This in field experience could also serve as a means by

which to build upon inter-professional working relationships (Medves, Paterson et al. 2008).

6.3.3.2 Acute critical care

Discussion of the community and inter-professional aspects of the rural paramedic role should not diminish the fact that case study findings also show rural paramedics are experts in emergency care in their respective communities. Indeed the roles interweave, with paramedics assisting in emergency departments alongside other health professionals. Postgraduate education and training for rural paramedics should involve specialized acute critical care, whether it is in conjunction with community-based programs or a separate advanced care program. This is particularly so given the peer and geographical related isolation faced in a rural community. Community based and inter-professional care is part of an extension to the existing traditional role for the rural paramedics, that being emergency response and it is important to remember this emergency response role when considering postgraduate education for rural paramedics.

In these findings, rural paramedics compare the type of advanced care critical care skills with those of aero-medical paramedic teams often sent to transfer critical patients for more definitive high-level care. Rural paramedics express a desire to have skill sets such as advanced airway and ventilation management with rapid sequence induction, or thrombolytics therapy. With

similar evidence that rural doctors provide more complex services the more remote their communities are (Humhreys, Jones et al. 2003: 418-419) advanced skill training should be an essential part of the postgraduate arsenal available to rural paramedics.

The counter argument that could be proposed to rural paramedics having access to advanced skills above that of a normal intensive care paramedic is that of degradation of skills. Indeed, some research shows rural paramedics are not as successful as their urban counterparts in the retention of skills (Bradley, Billows et al. 1998: 29-31). In some cases the belief that rural paramedics are not capable of dealing with advanced critical care is taken to the extreme, and rather than train rural paramedics in advanced skills, specialist aero-medical teams are introduced (Caldow, Parke et al. 2005: 54-55; Whitelaw and Hsu 2006: 76-78).

The argument of skills redundancy for paramedics needs further investigation, but evidence from other health professions indicates that rural practitioners are able to manage specialist skills with confidence. Rural midwives for example show similar confidence and competence to that of their urban colleagues, and even greater confidence in critical situations such as breech birth (Hundley, Tucker et al. 2007). Medical students too, when on clinical placement comment on the broader depth of knowledge required of

trained doctors in rural areas when compared to their urban colleagues (Denz-Penhey and Murdoch 2007).

Rather than rely solely on specialist retrieval teams, these results indicate that part of the rural paramedic role should be as an emergency care 'specialist'. This is much the same concept as calls for rural medical practitioners to be trained as rural specialists (Arvier, Walker et al. 2007; Murdoch and Denz-Penhey 2007).

6.3.3.3 Training as an educator

Two major roles for rural paramedics emerging from this study are management of ambulance volunteers, and education to community groups, health practitioners and volunteers. These findings suggests that one addition to the postgraduate experience should be education and training aimed at ensuring rural paramedics are confident to practice in this management and training role. Postgraduate education and training for rural paramedics needs to take a two pronged approach and be inclusive of both training the paramedic as an educator, and as a manager of volunteers.

The educational role of rural paramedics is multifaceted. I have shown that training of a volunteer workforce is an important component of maintaining that volunteer workforce and indeed, it is an expected component of the work of all participating rural paramedics (Rural Ambulance Victoria 2003; Rural

Ambulance Victoria 2005; Tasmanian Ambulance Service 2007). In support of case study findings is other Australian research indicating rural paramedics as a resource to enable the delivery of training for ambulance volunteers (Fahey, Walker et al. 2003: 3-6; O'Meara 2003a: 6; Stirling, O'Meara et al. 2007). Also, volunteers themselves rate training and skills maintenance by paramedics as an enjoyable and interesting aspect of their role (Fahey, Walker et al. 2002: 5; Fahey, Walker et al. 2003: 5). In addition, I have also shown that this education extends further than involving volunteer ambulance officers and includes other health professionals and community members. This education role will expand further in the future, with my suggestions of rural clinical placements for undergraduate paramedics seeing rural paramedics acting in the role of mentor for these undergraduates.

Current ambulance service support for paramedics as educators is inadequate. The formal recognition of an education role for paramedics appears only in rural position descriptions regarding education of volunteer ambulance officers or community members. These position descriptions, whilst mentioning an education role for paramedics only regard formal tertiary qualification in education as desirable, not essential (Rural Ambulance Victoria 1998; Rural Ambulance Victoria 2003; Rural Ambulance Victoria 2005; Tasmanian Ambulance Service 2007). The implication may be that since paramedics are experts in pre-hospital care, clinical competence may automatically qualify them to provide education and management for others.

This concept appears with other health care workers, and it has been suggested that it is community support that provides the confidence necessary to provide evidence based education (Rogers, Dunn et al. 2008: 42). Clinical competence will assist the paramedic as an educator but an awareness of principles of adult education should also be present (O'donnell and Lawson 2006: 3; Rogers, Dunn et al. 2008: 42-44).

Whereas principles of adult education could form part of a curriculum for a general postgraduate rural paramedic course, it is possible to provide such education in specific units. In the absence of ambulance service support, my findings demonstrate how rural paramedics are showing initiative to advance their own training. After recognizing the shortfall in current postgraduate education, all undertook various programs to gain qualification as educators. Some even saw the need to address a shortfall in training as managers of small groups such as volunteers and sought to undertake such training. This type of postgraduate qualification is similar to the suggestion by Rogers, Dunn et al. (2008: 42) whereby training health practitioners to be educators could be achieved by specific workshop sessions. This concept would also be in line with the ambulance style of case based learning discussed in section 6.3.1 (p. 210).

Given the geographical and professional isolation of rural areas, such courses are well suited to distance education learning, and the future of postgraduate

education for rural paramedics will see the further development of remote based education and management techniques. These can include distance education at various institutions and internet or video-based education. As well as using the internet for downloading to various media devices for viewing at later stages (White and Bryant-King 2008; Williams and Bearman 2008) internet based education would include specific academic websites where resources can be consulted at any time. An example of this is the Rural Health Education Foundation of Australia which offers on line education in a wide range of subjects relevant to rural health care practice (Rural Health Education Foundation 2008).

6.3.3.4 Summary

Postgraduate education for rural paramedics has the ability to build upon roles of rural paramedics and provide rural communities with a health care expert involved in much more than treatment of acute critical health problems. Rural paramedics display an aspect of community-based care including primary health care and inter-professional practice. Local and international initiatives have seen the formal development of education and training aimed at qualifying rural paramedics with these aspects in mind. Postgraduate education for rural paramedics may require different directions of focus, and important areas such as advanced critical care may require individual attention. So too, paramedics as managers of volunteers and as educators are vitally important to the roles of rural paramedics and the

communities in which they work. Paramedics have previously sought their own education and training in these areas, and support from ambulance organizations will further enhance the skills in these areas.

6.3.4 Continuing professional development

When considering education for rural paramedics one crucial element is that of continuing professional development. Both rural and urban paramedics in this study mention this as an area that is in need of improvement. This important keystone to the education process is necessary to allow paramedics the ability to enhance current practice and keep in touch with future developments. Continuing professional development, although partly the responsibility of individual paramedics, requires proactive support of ambulance organizations to be relevant and representative of the roles of the paramedic (Patrick 2007; Hotchin 2008). Rural paramedics have special requirements concerning continuing professional development and these relate to operating in isolation from their peers. For continuing education in a rural area, issues of peer support, dissemination of information, and knowledge of how to access information are all important considerations.

Continuing professional development is an essential element in the education process for the paramedic profession, and is recognized in worldwide plans for future expansion of paramedic scope of practice (National Highway Traffic Safety Administrator 2000; Department of Health (UK) 2006: 58;

O'Meara, Walker et al. 2006: 66). Continuing professional development in paramedic practice has been used to enhance topics that have proven to be practiced in field but not adequately covered in initial training, these include stroke education (Bray, et al. 2005, p300), understanding of pain principles (French, et al. 2006, p73-75), and paediatric care (Glaeser, et al. 2000, p33; Miller et al. 2004, p271; Spaite et al. 2000, p178). Where continuing professional development has been absent, skills deterioration has been shown, particularly with airway management, spinal immobilization and intravenous therapy (Zautcke, et al. 1987, p505-512), the ability to perform medical calculations accurately (Hubble, et al. 2000, p253), treatment with defibrillation (Ornato, McNeill et al. 1984), and care of paediatric patients (Gaffney and Johnson, 2001, p82-83).

Gaining access to professional development programs that were considered appropriate was a problem for paramedics, urban and rural, in this study. This difficulty is a recurrent theme associated with continuing professional development of other health professionals. Amongst the medical profession for example there is a general low satisfaction with continuing professional development as a support system worldwide (MacIsaac, Snowdon et al. 2000; Yadav and Lin 2001; Matsumoto, Okayama et al. 2005). One of the reasons for this low satisfaction is the difficulty in gaining access to education and training programs specific to the context of practice (Hegney, Pearson et al. 1997; Spencer, Bull et al. 1998; Stephenson, Blue et al. 1999). In my

findings, gaining access to professional development programs again appears as a major theme.

A partial answer to this dilemma would lie with how individual ambulance services address the delivery of continuing education programs and there is evidence of some specific continuing professional development in various parts of Australia. Two of these areas are that of the chronic and social care so important for urban paramedics but also experienced by rural paramedics. At the time of writing, the New South Wales (NSW) ambulance service was piloting limited continuing professional development in an attempt to manage certain patients in their home environment (Ambulance Service of New South Wales 2008: 51-56). Another such area is that of mental health care by paramedics and the NSW *interagency action plan for better mental health* (New South Wales Government 2005: 7,23,24,27) plays an integral part in a continuing professional development program with an aim of mental health training within the New South Wales Ambulance Service (Ambulance Service of New South Wales 2007: 2).

Concerted efforts by ambulance organizations to keep pace with evolving roles of paramedics and provide relevant continuing professional development are essential to paramedic performance in these roles. Postgraduate courses such as the Certificate in Remote Paramedical Practice (James Cook University 2007) go a long way to addressing the scope of

practice experienced by rural paramedics but need the backup of continuing education programs to ensure that these paramedics are supported in their practice. This became particularly evident in one extended scope of practice project from the 1980s in the USA, which included some advanced clinical procedures such as skin closure and other new community based procedures including immunization or family planning. Whilst initially promising, the project ended in disarray partially due to a lack of any organized continuing professional development (Hauswald, Raynovich et al. 2005: 252).

There is more to continuing education programs than content alone, and in rural areas, addressing the issue of isolation from peers is crucial, part of the problem experienced in the previous example was a concentration on initial content rather than any follow up support form the paramedics' own professional peer group. Although my study reveals a strong inter-professional approach in rural areas, other health practitioners are not always relevant sounding boards for decisions made; they will have limited knowledge of the pre-hospital environment of the paramedic. A similar issue has been seen with allied health practitioners who raised concern for a lack of support from within their own profession in rural areas (Battye and McTaggart 2003).

Suggestions for the inclusion of peer support in continuing professional development come from the paramedic practitioner programs of the United

Kingdom. A feature of some of these programs is clinical governance that includes not only regular general practitioner mentoring but clinical supervision from within the paramedic profession (Woollard 2006). A formalized approach to provision of peer support with continuing professional development may include the converse of clinical placement to rural areas, giving qualified rural paramedics the opportunity to undertake occasional clinical placements in urban areas. This particular solution has been evidenced in Queensland with rural allied health professionals gaining improved clinical skills, networking opportunities, access to metropolitan hospitals and management resources, and general support (Parkin, McMahon et al. 2001: 298-301).

My results indicate that with the isolation from professional peers, individual input by rural paramedics is an important supplement to any continuing professional development. Some rural paramedics in my study show initiative to meet at various times for the purpose of self-appraisal and clinical update. In the UK too, because individual communities and paramedic needs may differ, there is suggestion that a part of paramedic continuing professional development be the responsibility of the individual, with support and encouragement from paramedic organizations (Department of Health (UK) 2006: 58).

Compounding the issue of isolation in rural areas is that of information dissemination, and the use of technologies such as tele or video conferencing, and internet-based training are ways of addressing the problems with information dissemination raised in my research. The use of such technologies must be in conjunction with the face-to-face peer contact mentioned previously (pp. 63-64), not only to gain from the benefits of peer contact but also to ensure that rural paramedics have good training in the operation of these methods. Such technologies must work, and be in consideration of local resources. It is of no use arranging a video conference for people with poor training in how to operate the technology, or delivering a complex internet based learning program if the recipient does not have a good internet connection.

Use of established continuing education programs specifically designed to meet the need of other rural health workers may also be of use for rural paramedics, this is especially so when considering the inter-professional nature of rural health work. Programs such as that run by the Rural Health Education Foundation in Australia (Rural Health Education Foundation 2008) may offer rural paramedics an opportunity to keep in touch with current health practices whilst at the same time helping to build inter-professional links.

Examples from Australia show that there is already some success utilizing internet and electronic resources with paramedic continuing education. In Tasmania during 2008, use of the ambulance service intranet and classroom sessions facilitated the upgrade of each paramedic with new patient care guidelines. At the time of writing a similar site is being developed for the purpose of continuing education for ambulance volunteers (Tasmanian Ambulance Service 2009b). In NSW the intranet is being used for online discussion forums, facilitated by an ambulance educator (White, Corbett et al. 2006), and clinical sessions and updates are now being added to podcasts to enable paramedics access material at any time (White and Bryant-King 2008).

6.3.4.1 Summary

Continuing professional development is an essential element in the education process for the paramedic profession in order to enhance current practice and keep in touch with new developments; however, there appears a recurrent theme associated with continuing professional development and that is of a lack of satisfaction with continuing professional education programs. Paramedic services need to address the delivery of continuing education programs and there is some recent evidence of this within Australia with professional development programs in community based and mental health care.

Concerted efforts by ambulance organizations to keep pace with evolving roles of paramedics and provide relevant continuing professional development are essential to paramedic performance in these roles. There is more to continuing education programs than content alone, and in rural areas addressing the issue of isolation from peers is crucial. Solutions may appear in the forms of face-to-face clinical supervision, and urban clinical placement for rural paramedics. Continuing professional development will also require input from individual paramedics.

Compounding the issue of professional isolation in rural areas is that of information dissemination, and the use of technologies such as tele or video conferencing, and internet-based training are ways of addressing the problems with information dissemination. Use of established continuing education programs specifically designed to meet the need of other rural health workers may also be of use for rural paramedics, and there is already some success in Australia utilizing internet and electronic resources with paramedic continuing education.

6.4 Summary of discussion

The aim of this chapter has been to discuss the case study results within the context of the main purpose of this research project, which was to compare rural paramedic practice with urban paramedic practice in order to establish

whether rural paramedics are practicing distinct roles necessitating specifically directed education and training.

The differences between rural paramedic practice and urban paramedic practice found in this study situate rural paramedics in parallel with definitions of rural medicine and rural health as separate health care specialties. As with other health care disciplines within Australia which have separate rural ‘arms’, rural paramedic practice appears deserving of dedicated education and training. The rural paramedic community response suggests that education and training of volunteers, community members and health professionals needs a community-based aspect. Being a inter-professional team member, rural paramedics will benefit from participation in learning activities conducted in a inter-professional environment. In order to educate and manage volunteers, rural paramedics need to know how to achieve this. Finally, the specialized nature of an isolated rural environment will influence the not only initial education and training but the delivery of on going education and training for rural paramedics.

This thesis argues there is room for better targeted education and training for rural paramedics across all levels of undergraduate, postgraduate, and continuing professional development education and training. Given the findings that rural paramedics practice a community-based response, operate within an inter-professional team, are managers of volunteers, and are

isolated health care workers, the methods of Case Based Learning (CBL) commonly used in paramedic education are well suited to specific education for rural paramedics. Case based scenarios lend themselves to inter-professional participation, management of an ambulance volunteer workforce, and experiencing the isolation and unique working environment of rural paramedics. Delivery of educational sessions to isolated areas can make use of techniques external to the classroom such as internet or downloading of lectures.

There are essential elements for consideration in the development of both current and future rural paramedic education and training. These study findings have shown that the role of rural paramedics is one involving a high degree of community involvement, with a strong element of inter-professional practice, yet these are missing from undergraduate paramedic education and training. By incorporating measures such as rural clinical placements, offering an inter-professional educational experience, or even encouraging students from rural backgrounds, paramedic undergraduate students will develop an early understanding of the roles of rural paramedics. Other benefits will appear for undergraduate paramedic education and training in general, as an inter-professional approach has the ability to bring to students an overview of important elements such as chronic, social or mental health care.

Postgraduate education for rural paramedics has the ability to build upon roles of rural paramedics and provide rural communities health care experts involved in much more than treatment of acute critical health problems. The treatment of these critical care problems is a priority of rural paramedics and attention to this type of care will remain part of paramedic education and training. In addition to this however, rural paramedics display an aspect of community-based care including primary health care and inter-professional practice. Local and international initiatives have seen the formal development of education and training aimed at qualifying rural paramedics with these inter-professional and primary health care aspects in mind, and these aspects should form the basis of any postgraduate rural paramedic education and training.

Provision of postgraduate education aimed at enhancing the roles of rural paramedics can involve more than formalized qualification as a rural speciality, and shorter specific courses have the ability to cater to these rural roles. In the absence of organizational support, rural paramedics have sought their own education and training through external providers in the important areas of volunteer management and education.

Continuing professional development is an essential element in the education process for the paramedic profession, and concerted efforts by ambulance organizations to keep pace with evolving roles of paramedics is paramount to

paramedic performance in these roles. Continuing professional development in rural areas is especially important, given professional and geographical isolation. Use of established continuing education programs specifically designed to meet the need of other rural health workers may be of use for rural paramedics, at the same time enhancing the inter-professional and community based rural paramedic roles.

Overall, these results of a comparison of rural and urban paramedic practice in the context of education and training for rural paramedics, have informed the education and training needs for specialty rural paramedic practice.

Chapter 7
Conclusion and future directions

7.1 Summary of Thesis

The purpose of this study was to compare rural and urban paramedic practice within two states in Australia in order to establish whether rural paramedics are practicing distinct roles necessitating specifically directed education and training.

This thesis is significant in that there is currently little evidence comparing the roles of rural paramedics with urban paramedics in Australia. Combining this with several suggestions of a mismatch between paramedic curriculum and practice (Lendrum, Wilson et al. 2000; Kilner 2004b; Cooper 2005) the contribution of knowledge gained from my research adds to the foundations needed in order to establish relevant education and training for rural paramedics in Australia.

A qualitative comparative case study strategy was used to compare rural and urban paramedic practice. Multiple sources of data were collected, and these included: semi-structured interviews with intensive care paramedics across two states in Australia, audit of case dispatch data, review of documentation, including job descriptions, ambulance service and union websites, archival information, local media, and universities, and observation of paramedics

within their local environment, key processes and events. This allowed triangulation of data and reduction of research bias.

Two research questions addressed the research purpose to test that rural paramedics are practicing distinct roles necessitating specifically directed education and training, and the previous two chapters have answered these questions as well as provide informed discussion. I briefly summarize the answers to, and discussion of the research questions here.

7.1.1 How does the practice of rural paramedics compare with that of urban paramedics?

A major finding of this study is that clear differences between rural and urban paramedic practice are present. These differences appear in four main ways. Rural paramedics:

1. practice a community response rather than a case dispatch response,
2. are inter-professional team members rather than solely ambulance team members,
3. are educators and managers of volunteers rather than clinical supervisors and,
4. are isolated health workers rather than having access to full resources.

A strong theme among urban paramedics is that they feel poorly prepared for cases involving mental health, social, and chronic care, despite these cases making up a large proportion of their workload.

The main similarity between rural and urban paramedics is a strong desire for appropriate continuing professional development. Ambulance organizations in both the rural and urban areas of this case study claim to have continuing professional development programs in place. Paramedics, however, discuss how such programs are sometimes irrelevant to their practice, and with poor information dissemination. Paramedics feel that design of such programs should be in consultation with practicing paramedics, but is not.

7.1.2 How does the practice of rural paramedics compare across different local approaches?

This study has revealed that in both the 'RESP', and 'Sufficing' models of rural paramedic practice there are consistent similarities, with only one notable difference. Both models serve as descriptions of local approaches to paramedic practice, and in both, the differences when compared to urban paramedic practice are the same. The area in which the two rural models do show some difference is in the management of ambulance volunteers. 'RESP' paramedics discuss their interaction with volunteers more using a total management perspective, whereas 'Sufficing' paramedics tend to mention volunteer interaction only from an education standpoint.

The similarities between the two rural models studied added strength to the finding of differences between rural paramedics and urban paramedics.

7.1.3 Informing education and training for specialty rural paramedic practice

Use of a comparative case study reveals differences between rural paramedic practice and urban paramedic practice, which are in parallel with definitions of rural medicine and rural health as separate specialties. As with other health care disciplines within Australia which have separate rural 'arms', rural paramedic practice is different from urban paramedic practice and is therefore likely to need areas of dedicated education and training. The paramedic community engagement will benefit from education and training with a community based aspect. Being an inter-professional team member will benefit from participation in learning activities conducted in a inter-professional environment. In order to educate and manage volunteers, rural paramedics need to know how to achieve this. Finally, the specialized nature of an isolated rural environment will influence not only the initial education and training, but the delivery of on going education and training for rural paramedics.

Given the findings that rural paramedics have a community-based practice, operate within an inter-professional team, are managers of volunteers, and are

isolated health care workers, the methods of Case Based Learning (CBL) commonly used in paramedic education are well suited to specific education for rural paramedics. Case based scenarios lend themselves to inter-professional participation, management of an ambulance volunteer workforce, and experiencing the isolation and unique working environment of rural paramedics.

There are essential elements needing consideration in the development of both current and future education and training for rural paramedics. The study findings have shown that rural paramedics have a high degree of community involvement, with a strong element of inter-professional practice, yet these elements are missing from undergraduate paramedic education and training. Other disciplines such as medicine, nursing or allied health have incorporated inter-professional and community based aspects to their own rural education and training programs.

Inter-professional and community based aspects of rural paramedic practice are important not only for undergraduate students but also for postgraduate education and training. Local and international initiatives such as the James Cook University graduate certificate in remote paramedic practice, or the paramedic practitioner in the United Kingdom, have seen the formal development of education and training aimed at qualifying rural paramedics with these inter-professional and primary health care aspects in mind. These

aspects should form the basis of any postgraduate education and training for rural paramedics.

Provision of postgraduate education aimed at enhancing the roles of rural paramedics can involve more than formalized qualification as a rural speciality, and shorter specific courses have the ability to support these rural roles. In the absence of organizational support, rural paramedics have sought their own education and training through external providers in the important areas of volunteer management and education.

Development of postgraduate education for rural paramedics should not neglect the critical care aspect of the paramedic role in a rural area. Rural paramedics are experts in pre-hospital care and postgraduate opportunities in advanced paramedic care should be encouraged and made available to rural paramedics.

Maintenance of critical care skills, as well as the inter-professional and community based skills will all require attention in continuing professional development. Although continual professional development programs are in place, rural paramedics comment about the irrelevancy of some material, as well as the lack of input from paramedics themselves in the design of continuing professional development programs. Continuing professional development in rural areas is especially important, given professional and

geographical isolation. Despite contact with other health professionals, rural paramedics face physical isolation from peers and clinical supervisors. Technologies such as tele or video conferencing, and internet-based training are ways of addressing the problems with information dissemination in geographically isolated areas. Peer contact is also important, and learning from other professions, use of established continuing education programs specifically designed to meet the need of other rural health workers may also be of use for rural paramedics, at the same time enhancing the inter-professional and community based rural paramedic roles.

7.2 Study Strengths

The choice of a case study strategy for this research project is, as Yin (2003: 5-7) suggests, well suited to *how* or *why* questions posed. Strengths of the case study approach lie in the central concept that no manipulation of events is required, and several cases can be examined.

This use of multiple cases allowed observation for any similarities and differences of data across and within cases. In this study, cases consisted of one urban paramedic model and two separate rural paramedic models. Similarities of data within the units of analysis for the urban model, and again the two rural models offered what Yin (2003: 47) regards as a literal

replication of data. As the data was consistent within each model, comparison across cases offered answers to the research questions.

Importantly the cases within my study consisted of several units of analysis, thus increasing the generalizability of results. The selection of these units of analysis was across two states in Australia, and included selection from two separate rural models of practice as well as the urban model. In this way, there was comparison of not only rural and urban paramedic practice, but also separate rural models of practice. It is significant for my results that the two rural models chosen both reflected similarities in the roles of rural paramedics.

The use of a case study strategy allowed for the inclusion of data other than field interviews. The multiple sources of data used comprised:

- semi-structured interviews with intensive care paramedics across two states in Australia,
- audit of case dispatch data
- review of documentation, including job descriptions, ambulance service and union websites, archival information, local media, university curricula, and
- observation of paramedics within their local environment, key processes and events.

This triangulation of data increases rigor of research results.

7.3 Study Limitations

The main limitation presented by this research project is that any generalization is limited to the areas examined, and on theory and concepts. It was beyond the scope of this study to offer a comparison of all rural and urban paramedics in Australia and some purposeful selection was required.

Data is specific to the states of Victoria and Tasmania, and to the cases used. By utilization of models of rural and urban practice it is possible to suggest generalization of results beyond these two states, however further evidence is needed to support such suggestions.

Triangulation is used as part of the case studies strategy as a means by which to increase generalizability, reduce error, and increase reliability; however, triangulation in this research process has been limited to data. Different forms of triangulation are also available, and these include; investigator triangulation with use of different investigators, methodological triangulation or use of mixed methods, and theoretical triangulation where data are tested against opposing theoretical points (Thurmond 2001: 256-257; Flick 2004: 178-181). An expansion of triangulation methods would help reduce possible bias associated with a single type.

As a singular type, triangulation of data can take the form of being over different times, people, events, situations or places (Thurmond 2001: 254; Flick 2004: 178). Further limitation is in the use of only intensive care paramedics as research subjects. Further research may include other classifications of paramedics, including students, non intensive care paramedics, ambulance managers, educators, community members, or patients. Additional to this is the limited period in which data gathering took place. Follow up investigation will allow comparison of data over several periods.

The use of rural classification scales to define what is rural and urban; in addition to use of theoretical models of paramedic practice present a limitation on the selection of rural and urban sites. This is particularly so with urban areas where differences in classification appear between capital cities. Selection of urban sites was limited to similarities in services rather than use of classification scales.

Models of paramedic practice used in this study also present a limitation. Although the models of ‘Sufficing’ and ‘RESP’ have undertaken a peer review process (O'Meara 2002; O'Meara, Walker et al. 2006), they remain only as descriptions of the types of work undertaken by rural paramedics in local situations. Further research is required to provide more evidence of

support for differing paramedic models. This study forms part of this research by providing a comparison across different local approaches.

7.4 Future Directions

The health workforce in Australia, particularly in rural areas, is in a state of continual development, and health professions such as medicine, nursing, and allied health are witnessing the development of specific rural practice. An important aspect of this rural practice is education and training. Prior to this study, there has been little information comparing the practice of rural paramedics with that of urban paramedics in Australia, and a lack of evidence as to whether rural paramedics operate with distinct roles requiring specific education and practice. Future directions for education and training specific to rural paramedic practice in Australia depend on addressing this gap.

With worldwide support for changes in paramedic training, education and practice, this study has contributed valuable information that recognizes rural paramedics within a specialty branch of paramedic care, and supports specifically directed education and training for rural paramedics in Australia. Findings are in line with international trends where the future roles of paramedics are expected to involve non emergency based practice that will be used within the community, with emphasis placed on the need to also train and educate to higher level skills (Joint Royal Colleges Ambulance Liaison

Committee 2000; National Highway Traffic Safety Administrator 2000). As suggested by O'Meara, Walker et al. (2006), the directions taken for education and training should allow for the three levels of undergraduate, postgraduate, and continuing professional development.

In recognition that the work of rural paramedics differs from that of urban paramedics, an important step in the education and training process for rural paramedics will be orientation to their roles. By incorporating measures such as rural clinical placements, offering a inter-professional educational experience, or even encouraging students from rural backgrounds, paramedic undergraduate students will develop an early understanding of the practices of rural paramedics.

Further research will be required to determine the success of fledgling undergraduate rural clinical placement programs for paramedics such as the one conducted at Flinders University in South Australia (Flinders University 2009a). Research will also be necessary to determine suitable periods for rural clinical placement. Learning from other rural disciplines, part of the orientation to a rural career could well involve promotion of placements for students from rural backgrounds. Investigation of paramedics from rural backgrounds and their uptake to a rural career will further help determine correlation between these two aspects for Australian paramedics.

In line with a inter-professional role, there should be attention to exploration of ways to achieve inter-professional awareness through education. Development of common first year curricula for health disciplines may help break down ‘silos’ of individual health disciplines.

The evidence from this research is that rural paramedics are practicing distinctive roles deserving of recognition as a rural discipline. Postgraduate education and training for rural paramedics should consider their roles, not only in formal courses in rural practice, but as also individual courses tailored to suit individual rural community and paramedic needs. Future development will see enhancement of postgraduate courses such as the James Cook Postgraduate Certificate in Remote and Rural practice and such courses will involve inter-professional practice with clinical placement within rural communities.

As well as inter-professional and community based components, development of postgraduate education for rural paramedics will involve education and training as managers of volunteers, and as educators. Although rural paramedics may be clinically competent, when educating ambulance volunteers, community members, and other health professionals, a basis in adult education is a necessity. This education role will become more important as proposals for rural clinical placement will see rural paramedics also acting as mentors for paramedic students.

In development of community based and inter-professional components the primary role of rural paramedics as emergency care experts should not be neglected, and postgraduate education and training in advanced critical care need to be offered to rural paramedics. The proposal of advanced critical care roles for rural paramedics will require further study in order to determine the level to which rural paramedics are able to maintain such skill sets and knowledge base.

All education and training for rural paramedics, as with urban paramedics, will need the support of continuing professional development. Future directions for continuing education programs will include input from paramedics themselves in order to establish what is required in the development of such programs. Ambulance organizations need to consider greater peer contact for rural paramedics, and to some extent, achievement of this will occur with rural clinical placements for undergraduate and postgraduate students. In line with other rural health professions, use of technologies such as the internet, or video conferencing will help overcome problems of isolation in delivery of continuing professional development programs. Rural paramedics needs to be made aware of programs offered by other health professions in rural areas such as those conducted by the Rural Health Education Foundation (Rural Health Education Foundation 2008).

My study has aimed to provide evidence that rural paramedics operate with distinct roles, requiring specific education and training with rural components. In order to do this I have addressed a gap in the knowledge of whether rural paramedic practice is any different to urban paramedic practice. My findings reveal that rural paramedics across two states in Australia are involved in roles of community response, inter-professional practice, education and management, all whilst practicing in geographical and professional isolation. There is distinct similarity with the opening quote in this thesis by Wakerman (2004) which paints a picture of geographical and professional isolation, of inter-professional awareness, and of extended scope of practice for the remote health care practitioner. By attending to the three tiers of undergraduate education, postgraduate education, and continuing professional development, the future for rural paramedics in Australia can be founded on a solid information base and thus avoid the potential situation where education and training does not match what is practiced.

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Appendices

Appendix A

Ethics Approval University of Tasmania

COPY

23 JAN 2007

Private Bag 01 Hobart
Tasmania 7001 Australia
Telephone (03) 6226 2764
Facsimile (03) 6226 7148
Marilyn.Knott@utas.edu.au
http://www.research.utas.edu.au//index.htm

MEMORANDUM

HUMAN RESEARCH ETHICS COMMITTEE (TASMANIA) NETWORK

UTAS

MINIMAL RISK APPLICATION APPROVAL

22 January 2007

Professor Judi Walker
North West Rural Clinical School
Private Bag 3513
Launceston

Ethics reference: H9239

The evolution of rural paramedics: Bridging the gap between education, training and practice.

Student: Peter Mulholland (Masters)

Dear Professor Walker

Acting on a mandate from the Tasmania Social Sciences HREC, the Chair of the committee considered and approved the above project on 22 January 2007.

All committees operating under the Human Research Ethics Committee (Tasmania) Network are registered and required to comply with the *National Statement on the Ethical Conduct in Research involving Humans 1999* (NHMRC guidelines).

Therefore, the Chief Investigator's responsibility is to ensure that:

1) All researchers listed on the application comply with HREC approved application.
2) Modifications to the application do not proceed until approval is obtained in writing from the HREC.
3) The confidentiality and anonymity of all research subjects is maintained at all times, except as required by law.
4) Clause 2.37 of the *National Statement* states:
   An HREC shall, as a condition of approval of each protocol, require that researchers immediately report anything which might warrant review of ethical approval of the protocol, including:
   a) *Serious or unexpected adverse effects on participants;*
   b) *Proposed changes in the application; and*
   c) *Unforeseen events that might affect continued ethical acceptability of the project.*

   The report must be lodged within 24 hours of the event to the Ethics Executive Officer who will report to the Chairs.

A PARTNERSHIP PROGRAM IN CONJUNCTION WITH THE DEPARTMENT OF HEALTH AND HUMAN SERVICES

5) All participants must be provided with the current Information Sheet and Consent form as approved by the Ethics Committee.

6) The Committee is notified if any investigators are added to, or cease involvement with, the project.

7) This study has approval for four years contingent upon annual review. An *Annual Report* is to be provided on the anniversary date of your approval. Your first report is due [12 months from 'Ethics Committee Approval' date]. You will be sent a courtesy reminder by email closer to this due date.
Clause 2.35 of the National Statement states:
As a minimum an HREC must require at regular periods, at least annually, reports from principal researchers on matters including:
   a) *Progress to date or outcome in case of completed research;*
   b) *Maintenance and security of records;*
   c) *Compliance with the approved protocol, and*
   d) *Compliance with any conditions of approval.*

8) A *Final Report* and a copy of the published material, either in full or abstract, must be provided at the end of project.

Yours sincerely

Ethics Executive Officer

A PARTNERSHIP PROGRAM IN CONJUNCTION WITH THE DEPARTMENT OF HEALTH AND HUMAN SERVICES

Appendix B

Ethics Approval Metropolitan Ambulance Service Victoria

Ambulance
Metropolitan Ambulance Service
ABN 52 253 860 571
375 Manningham Road
Doncaster Victoria 3108
P.O. Box 2000
Doncaster 3108
Administration: 03 9840 3500
Facsimile: 03 9840 3583
www.ambulance.vic.gov.au

20th April 2007

File Ref: COP/11/73

Mr Peter Mulholland
Clinical Support Officer
Tasmanian Ambulance Service
PO Box 1924
LAUNCESTON TAS 7250

Dear Peter

Re: Research Proposal R07-004: "The evolution of rural paramedics: Bridging the gap between education, training and practice " Protocol version 1 dated 20/02/2007

I am pleased to inform you that MAS have approved participation in the above study. Any changes to the original application will require submission of a protocol amendment to the MAS Research Committee for consideration, as this approval only relates to the protocol version as detailed above. Please ensure that MAS is informed of any protocol changes as soon as possible.

If you have not already done so, you will need to sign a confidentiality agreement (attached). Please sign the attached form and return it to Karen Smith as soon as possible.

As a component of the ongoing communication processes, MAS requires quarterly status reports and a final report on completion of the study. A report on the June 2007 quarter will be due in July 2007 (see attached format). You will be e-mailed a copy of the status report pro-forma with a reminder closer to the date. Status reports are required to be submitted by e-mail.

We look forward to working with you on this important project.

Yours sincerely

ALEX CURRELL
General Manager Strategic Planning

Appendix C

Letter seeking permission from ambulance services

Peter Mulholland
Clinical Support Officer
Tasmanian Ambulance Service
Masters Candidate
University of Tasmania

PO Box 1924 Launceston
Tasmania 7250 Australia
Telephone (03) 6328 1633
Mobile 0404 484671
Facsimile (03) 6336 5775
Peter.Mulholland@utas.edu.au

FACULTY OF HEALTH SCIENCE, DEPARTMENT OF RURAL HEALTH

29 January 2007

CEO (Relevant ambulance service)

Dear

This is to introduce myself, Peter Mulholland, a Clinical Support Officer with the Tasmanian Ambulance Service. In 2006 I was awarded the inaugural ACAP/Calvary/UTAS Paramedic Bursary to undertake a preliminary Masters with the University of Tasmania and the Department of Rural Health. This has led to study toward a Masters in Medical Science which undertakes to examine rural and urban paramedics within Australia.

With current moves nationally and internationally promoting extension of paramedical practice, this project highlights the importance of well designed education and training, particularly for rural paramedics. The study asks questions such as how is rural paramedical practice different to urban practice; how are these differences catered for in education and training; and how can we use these differences to inform the paramedical curriculum?

This study will provide your ambulance service with an opportunity to contribute valuable information toward the enhancement of paramedical curriculum, and continued development of the paramedical profession.

The project will involve case studies to be conducted in both Tasmania and Victoria. I will be using voluntary interviews with paramedics, and review relevant documents such as position descriptions and current curricula.

Supervision of the study is being undertaken by Professor Judith Walker, and Ms. Christine Stirling (PhD Candidate), both of the University of Tasmania, Department of Rural Health. This study has received ethics approval from the Human Research Ethics Committee (Tasmania) Network.

As CEO of (relevant ambulance service), your assistance and expertise will be invaluable to my project. As such, I am seeking your permission to undertake the following activities:

-To be supplied with contact details of area managers, in order that I may establish contact with them to assist in recruitment of suitable paramedics for interviews;

-To examine non sensitive documentation relating to the role of the paramedic in your service. Such documentation will be that available through human resources or public access, and will include position descriptions and previous advertisements for employment. No personal data will be collected;

-To access retrospective case dispatch details. This will include case type only eg; chest pain. No patient details or ambulance treatments are required.

I envisage minimal disruption to staff or operations within your ambulance service during the period of this research project.

I would be most grateful if you would be able to respond in writing to my request as soon as possible. A stamped return addressed envelope is included.

Also included is an information pack containing a letter of invitation and information statement, which will be sent to participants.

I will be most happy to provide further information should you wish to contact myself by phone or email. You can also feel free to make contact with my supervisors (see contact details below), or, if you have any concerns of an ethical nature or complaints about the manner in which the project is conducted, you may contact the Executive Officer of the Human Research Ethics Committee (Tasmania) Network (see contact details below).
I appreciate the time you have given in your attention to my letter, and consideration of this important research project, and look forward to future correspondence.

Sincerely,

Peter Mulholland
Masters Candidate
University of Tasmania
Mob: 0404484671
Email: Peter.Mulholland@utas.edu.au

Supervisors:

Professor Judith Walker, University of Tasmania
Email: Judith.Walker@utas.edu.au

Ms. Christine Stirling, University of Tasmania
Email: Christine.Fahey@utas.edu.au

Ethics Approval:

Marilyn Knott
Ethics Officer – Social Sciences
Research & Development Office
University of Tasmania
Private Bag 1
Hobart TAS 7001
Phone (03) 6226 2764
Fax (03) 6226 2765
Email: Marilyn.Knott@utas.edu.au

Appendix D

Letter seeking permission from ambulance managers

Peter Mulholland
Clinical Support Officer
Tasmanian Ambulance Service
Masters Candidate
University of Tasmania

PO Box 1924 Launceston
Tasmania 7250 Australia
Telephone (03) 6328 1633
Mobile 0404 484671
Facsimile (03) 6336 5775
Peter.Mulholland@utas.edu.au

FACULTY OF HEALTH SCIENCE, DEPARTMENT OF RURAL HEALTH

UTAS

14 March 2007

Area Manager
Relevant Ambulance Service

Dear (manager),

This is to introduce myself, Peter Mulholland, a Clinical Support Officer with the Tasmanian Ambulance Service. In 2006 I was awarded the inaugural ACAP/Calvary/UTAS Paramedic Bursary to undertake a preliminary Masters with the University of Tasmania and the Department of Rural Health. This has led to study toward a Masters in Medical Science which undertakes to examine rural and urban paramedics within Australia.

With current moves nationally and internationally promoting extension of paramedical practice, this project addresses the need to develop well designed education and training, particularly for rural paramedics. The study asks questions such as how is rural paramedical practice different to urban practice; how are these differences catered for in education and training; and how can we use these differences to inform the paramedical curriculum?

This study will provide your ambulance service with an opportunity to contribute valuable information toward the enhancement of paramedical curriculum, and continued development of the paramedical profession.

In order to meet these objectives case studies will be conducted in both Tasmania and Victoria. I will be using voluntary semi-structured interviews with paramedics, and review of relevant documents such as position descriptions and current curricula.

Supervision of the study is being undertaken by Professor Judith Walker, and Ms. Christine Stirling (PhD Candidate), both of the University of Tasmania,

Department of Rural Health. This study has received ethics approval from the Human Research Ethics Committee (Tasmania) Network.

Permission has been obtained through your CEO (Name) who has also kindly suggested yourself as a contact person to aid in facilitation of this project.

I would like to gain your permission and assistance to distribute the attached information package to intensive care paramedics working from (Location). Probably the easiest way to distribute them would be via email.

The information package contains:

- Letter introducing the research project
- Information sheet

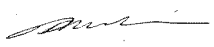
The package asks paramedics who are interested in participating to contact myself by email or fax, and they will then be sent a consent form. A mutual time and place will be organised for interviews with no planned disruption to normal procedures of ambulance operation.

Should I have no responses from distribution of information packages I will ask your assistance only to remind potential participants of the research project.

Please contact myself by phone or email as soon as possible to indicate your interest in assisting with this study, or to gain further information. You can also feel free to make contact with my supervisors (see contact details below), or, if you have any concerns of an ethical nature or complaints about the manner in which the project is conducted, you may contact the Executive Officer of the Human Research Ethics Committee (Tasmania) Network (see contact details below).

I appreciate the time you have given in your attention to my letter, and consideration of this important research project, and look forward to future correspondence.

Sincerely,



Peter Mulholland
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Mob: 0404484671
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Supervisors:

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Ms. Christine Stirling, University of Tasmania
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Appendix E

Information for participants

Peter Mulholland
Clinical Support Officer
Tasmanian Ambulance Service
Masters Candidate
University of Tasmania

PO Box 1924 Launceston
Tasmania 7250 Australia
Telephone (03) 6328 1633
Mobile 0404 484671
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Peter.Mulholland@utas.edu.au

FACULTY OF HEALTH SCIENCE, DEPARTMENT OF RURAL HEALTH

INFORMATION STATEMENT

This research project is being conducted as a Masters in Medical Science through the University of Tasmania's Department of Rural Health. The project was commenced in 2006 and planned for completion in 2008.

Title of project: The Evolution of Rural Paramedics: Bridging the Gap Between Training, Education, and Practice.

Investigator: Peter Mulholland, Masters Candidate, University of Tasmania

Supervisors: Professor Judith Walker, University of Tasmania
Ms. Christine Stirling, University of Tasmania

Project Summary

The project addresses the need to develop well designed training and education for rural paramedics. The research objective is to determine how differences between rural and urban paramedical practice can inform curriculum requirements for educating and training the rural paramedic. The information you provide will help;

1. determine differences between rural and urban paramedical practice;
2. relate these differences to education and training of paramedics;

3. inform the paramedical curriculum, to help ensure curriculum matches actual paramedical practice.

The project will involve interviewing paramedics from urban and rural stations as well as looking at relevant ambulance service documents such as position descriptions.

Who is being asked to participate?

Invitations to participate are being sent to advanced Life Support and Mobile Intensive Care paramedics at selected ambulance branches in rural and urban Tasmania and Victoria. Participation is voluntary.

What will be the benefit of participating?

You are being asked to participate because your perspective as an experienced paramedic is valuable. Your participation will help contribute important information in regard to training and education of paramedics within Australia, and help ensure paramedical curricula match what is practiced.

What will be asked?

The interview will ask about what paramedics do, and how the current curriculum is aligned with these roles. The questions will explore:

- Your understanding of the current Paramedic Role;
- You thoughts on future development for paramedical practice;
- The current and potential benefits of this role for health care clients;
- Your thoughts on education and training for current paramedical practice;
- Your thoughts on education and training for future paramedical practice.

The interview will not gather personal information, and is not concerned with examination of current protocols or guidelines.

How will the interview be run?

If you agree to participate, you will be asked to undertake an interview, arranged at a time and place suitable to yourself. The interview is estimated to last 60 minutes. With your permission the interview will be

taped, transcribed for analysis, and combined with other information to answer the research questions.

The investigator, Peter Mulholland, is currently employed by the Tasmanian Ambulance and there is a possibility you may personally know, or know of the investigator. Interviews will be carried out under the strictest confidentiality, and no discussion of information gained will take place outside of this research project.

How will confidentiality be maintained?

Any identifying references made in write up of the thesis or subsequent publications will only be done after you have had the opportunity to review the reference and given written permission for identification in this way. Should you wish not to be identified, data will be assigned a pseudonym or coded, and potentially identifying data will be generalized or removed in reporting of data.

Data gained from this research project will be securely stored at the University of Tasmania, Department of Rural Health for a period of 5 years after publication, and electronic information password protected. Raw data will be destroyed after this period.

Can I withdraw at any time?

Your decision whether or not to participate will not prejudice your future relations with the University of Tasmania or your employing ambulance service. There will be no payment or consideration made in recognition of your participation. If you decide to participate, you are free to withdraw your consent and to discontinue participation at any time without prejudice.

If you so wish, any information supplied by you to date will be withdrawn from the research.

How Can I View the findings?

As a participant you have the right to receive a summary of the research findings. For further information about the research, or to receive a copy of the findings, please contact Peter Mulholland, or the project supervisors, Professor Judith Walker, or Ms. Christine Stirling using the contact information below.

.

What to do if I wish to participate?
If you are interested in participating please contact Peter using the email or Fax details provided below. You will then be sent a consent form to complete. When we meet you will be given a copy of the consent form to keep.

Ambulance managers will not be informed of who has chosen to participate.

Who can I contact for further information?
Contact details of the investigator and supervisors are provided below. If you have any concerns or complaints about the manner the research is conducted, ethics contacts are supplied in the highlighted box.

Thank-you for reading this information sheet. Your participation in this research will help inform the paramedic curriculum within Australia.

This project has received ethical approval from the Human Research Ethics Committee (Tasmania) Network which is constituted under the National Health & Medical Research Council. The Committees under the HREC (Tasmania) Network use the *National Statement on Ethical Conduct in Research Involving Humans* to inform their decisions.

Should you have any concerns or inquiries contact details are as follows:

Marilyn Knott
Ethics Officer – Social Sciences
Research & Development Office
University of Tasmania
Private Bag 1
Hobart TAS 7001

Phone (03) 62262764
Fax (03) 6226 2765
Email: Marilyn.Knott@utas.edu.au
http://www.research.utas.edu.au/rdo/ethics/index.htm

Any issues you raise will be treated in confidence and investigated fully. You will be informed of the outcome.

Professor Judi Walker
Chief supervisor

Peter Mulholland
Researcher

Contact Details:
Peter Mulholland
PO Box 1924
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Professor Judith Walker, University of Tasmania
Email: Judith.Walker@utas.edu.au

Ms. Christine Stirling, University of Tasmania
Email: Christine.Fahey@utas.edu.au

Appendix F

Consent Form

CONSENT FORM

FACULTY OF HEALTH SCIENCE, DEPARTMENT OF RURAL HEALTH

UTAS

Title of project: The Evolution of Rural Paramedics: Bridging the Gap Between Training, Education, and Practice

Investigator: Peter Mulholland, Masters Candidate, University of Tasmania

Supervisors: Professor Judith Walker, University of Tasmania
Ms. Christine Stirling, University of Tasmania

I have read and understood the 'Information Sheet' for this study.

The nature and possible effects of the study have been explained to me.

I understand that the study involves an interview to be conducted over approximately 60 minutes dealing with my understanding of the roles ambulance paramedics, and how current curriculum is aligned with these roles.

I understand that all research data will be securely stored on the University of Tasmania premises for five years, and will then be destroyed.

Any questions that I have asked have been answered to my satisfaction.

I agree that research data gathered from me for the study may be published providing I have been given the opportunity to consider references to myself, and I have given written permission that these references may be used in this way. Should I wish not to be identified as a participant in any research output, I understand that any contributions

I make will be assigned a pseudonym or coded, and anything potentially identifiable will be generalised or removed in reporting of the data.

I understand that any information I supply to the researcher(s) will be used only for the research as specified.

I agree to participate in this investigation, as outlined in the information sheet, and understand that I may withdraw at any time without any effect, and if I so wish may request that any data I have supplied to date be withdrawn from the research.

Name of Participant:

Signature: Date:

Statement by Investigator

☐ I have explained the project & the implications of participation in it to this volunteer and I believe that the consent is informed and that he/she understands the implications of participation

If the Investigator has not had an opportunity to talk to participants prior to them participating, the following must be ticked.

☐ The participant has received the Information Sheet where my details have been provided so participants have the opportunity to contact me prior to consenting to participate in this project.

Name of Investigator

Signature of Investigator

Name of investigator _____

Signature of investigator _____ Date _____

Contact Details: Peter Mulholland
PO Box 1924
Launceston
TAS 7250
Mob: 0404 484671 Email: Peter.Mulholland@utas.edu.au

Appendix G

Interview Guide

1. Introduction and confirm consent

2. Can you describe what a paramedic does?

   Prompts

- area specific
- urban/rural
- emergency / non emergency
- community work?
- Hospital work?
- Community engagement
- Emergency response
- Primary health care
- Volunteers

3. Is there anything about the work of a paramedic that is different to what you expected?

   Prompts

- specific to area
- type of work
- If so, was there any training?

4. What alternatives are available for you as a paramedic if a patient needs medical care but not necessarily at a hospital emergency department?

5. What thoughts do you have regarding future development of what a paramedic does?

   Prompts

- extra skills
- extra knowledge
- cross over with other professions
- is there a need
- benefits to clients / community

6. What thoughts do you have regarding the current educational aspects relating to paramedic practice?

   Prompts

- undergraduate / postgraduate / continuing education
- access to training officers / educational materials
- methods used
- relative to place of employment (urban / rural)

7. What thoughts do you have regarding future educational aspects relating to paramedic practice?

   Prompts

- undergraduate / postgraduate / continuing education
- access to training officers / educational materials
- methods used
- relative to place of employment (urban / rural)

Appendix H

General comparison of Geelong and Royal Hobart Hospitals

Geelong Hospital	Royal Hobart Hospital
406 beds **370 inpatient beds**	**550 maximum beds** **Includes 460 acute overnight beds and 90 day beds**
24 hr 7 day Emergency Department **10 operating theatres** **15 ICU beds**	**24 hr 7 day Emergency Department** **9 bed ICU including cardio thoracic unit** **5 bed High Dependency Unit**
Cardiac catheter lab & angiography **Oncology & radiology services** **MRI** **Maternity** **Special care nursery**	**General medical and surgical** **Cardiac surgery** **Neurosurgery** **Burns treatment** **Hyperbaric treatment** **Neonatal and paediatric intensive care** **High risk obstetrics**

Sources: (Barwon Health online accessed 20th June 2008; Department of Health and Human Services online accessed 20th June 2008)

Appendix I

Health Care services for West Coast Tasmania (2008)

Location	Hospital Services
Zeehan	Zeehan Nursing centre – aged care programs, day centre, community nursing, home help, and personal care. Open 9am-5pm
Smithton	16 acute beds Accident & Emergency Visiting services –radiology, diabetic clinic, obstetric services, continence services, social work, mental health. Also Ambrose nursing home with 22 high care residential aged beds Community services include community nursing, home help, home maintenance, occupational therapy, physiotherapy, podiatry. Telehealth Tasmania Network
Queenstown	North west Regional Hospital, new facility opened 2007. Accident and Emergency 10 bed acute care section 16 bed aged care accommodation Oral health, child care health, community nursing, variety of allied health services, consulting rooms for visiting specialists. Incorporates general practice surgeries. Gaiety Theatre primary health care centre Telehealth Tasmania Network
Roseberry	Roseberry Community Hospital – At the time of writing had undergone some change in operation with threatened closure or reduction in services. As at 2008 is as follows: 10 acute care beds, accident and emergency, visiting diabetic clinic, co-ordination of community nursing. Hospital 24 hours 7 days per week. Services Monday – Friday 9-5pm
Strahan	Community health centre annex of Queenstown hospital – includes child health, community nursing, diabetic clinic, palliative care nurse, women's health

Source:(Department of Health and Human Services Online accessed 20th June 2008)

Appendix J

Medical and ambulance services for 'RESP' units of analysis

Location	Ambulance Services Staffing, caseload	Health services, GPs, hospital, emergency
East Coast Tasmania	East Coast intensive care Paramedic based in Scamander. Two incumbents, sole workers, 4 days on 4 days off. 444 emergency cases attended by Paramedic (2004). Other cases attended by volunteers, or were transfers only. Paramedic also works with volunteer Ambulance Officer units at St. Helens, St. Marys, Coles Bay, Swansea, & Bicheno. Scamander has no volunteer unit.	**St Helens:** 2 permanent GPs. Main hospital for the region: 10 beds, 3-4 emergency beds. Some community and allied health services. Break O'Day community health centre. Airstrip for light aircraft. **St Marys:** One permanent GP. Hospital has 4 beds, 24 hour staffing, GP clinics, visiting allied and community health services.
Mallacoota (Victoria)	Paramedic Community Support Co-ordinator. Sole worker. 10 Ambulance Community Officers (volunteers) on call 24/7 99 emergency or acute cases pa.	Two Gos in private practice; on call. No hospital. Closest hospital is 115km to Orbost region.
Omeo (Victoria)	Paramedic Community Support Co-ordinator. Sole worker. 12 Ambulance Community Officers (volunteers) on call 24/7. Major work is transport to Bairnsdale (125km). 96 emergency or acute cases pa	One GP in private practice, visits hospital 2-3 time per week. Omeo District Hospital has 4 acute beds; medical and aged care; limited after hours emergency care

Source: (O'Meara, Walker et al. 2006p. 11)

Appendix K
Dispatch types for West Coast paramedics in Tasmania

Type of case dispatched	Frequency % (of total cases) %	N	95% CI
Transfer	24.3	287	21.84 ↔ 26.79
Cardiac	10	119	8.37 ↔ 11.81
Breathing Problems	9.4	111	7.74 ↔ 11.08*
Unknown	8.4	99	6.82 ↔ 9.98*
Falls	6.3	74	4.90 ↔ 7.66*
Convulsion / Fitting	5.3	63	4.06 ↔ 6.62*
Traffic Accident	4.6	54	3.39 ↔ 5.77*
Abdominal Pain	4.3	51	3.17 ↔ 5.49*
Trauma	3.9	46	2.79 ↔ 5.01*
Unconscious / Fainting	3.6	43	2.58 ↔ 4.72*
Fire incident	2.0	24	1.23 ↔ 2.85*
Haemorrhage	1.9	23	1.16 ↔ 2.74*
Standby	1.9	23	1.16 ↔ 2.74*
Assault	1.6	19	0.89 ↔ 2.33*
Back Pain	1.4	16	0.70 ↔ 2.02*
Maternity	1.2	14	0.57 ↔ 1.81*
Overdose	0.1	13	0.50 ↔ 1.70*
Stroke / CVA	0.1	12	0.45 ↔ 1.59*

(* not significantly different from preceding case type) Year 2006 (N=1179)
Source (Tasmanian Computer Aided Dispatch System)

Appendix L
Dispatch types for East Coast paramedics in Tasmania

Type of case dispatched	Frequency % (of total cases) %	N	95% CI
Transfer	42.1	388	38.94 ↔ 45.32
Fall	7.7	71	5.99 ↔ 9.43
Cardiac	6.6	61	5.01 ↔ 8.23*
Unknown	6.5	60	4.92 ↔ 8.1*
Falls	6.3	74	4.90 ↔ 7.66*
Breathing Problems	5.0	46	3.58 ↔ 6.4*
Abdominal Pain	3.3	31	2.2 ↔ 4.55*
Unconscious / Fainting	3.3	30	2.11 ↔ 4.41*
Trauma	2.2	21	1.32 ↔ 3.24*
Traffic Accident	2.3	21	1.32 ↔ 3.24*
Psychiatric	1.8	17	0.98 ↔ 2.72*
Haemorrhage	1.4	13	0.65 ↔ 2.17*
Overdose	1.4	13	0.65 ↔ 2.17*
Convulsion / Fitting	1.3	12	0.57 ↔ 2.03*
Stroke / CVA	1.0	10	0.42 ↔ 1.76*
Back Pain	1.0	10	0.42 ↔ 1.76*
Assault	1.0	9	0.34 ↔ 1.62*
Allergy	1.0	9	0.34 ↔ 1.62*

(* not significantly different from preceding case type) Year 2006 (N=921)
Source (Tasmanian Computer Aided Dispatch System)

Appendix M

Dispatch types for the Southern Region urban paramedic in Tasmania

Type of case dispatched	Frequency % (of total cases)		
	%	N	95% CI
Cardiac	12.1	3772	11.74 ↔ 12.46
Breathing Problems	8.9	2774	8.58 ↔ 9.22
Fall	8.7	2712	8.39 ↔ 9.01*
Transfer	7.5	2338	7.21 ↔ 7.79
Abdominal	6.1	1901	5.83 ↔ 6.37
Condition Unknown	5.7	1777	5.44 ↔ 5.96*
Unconscious / Fainting	4.8	1496	4.56 ↔ 5.04
Operational Coverage	4.4	1371	4.17 ↔ 4.63*
Traffic Accident	3.7	1153	3.49 ↔ 3.91
Convulsions / Fitting	2.8	873	2.62 ↔ 2.98
Overdose	2.3	717	2.13 ↔ 2.47
Haemorrhage	2.2	686	2.04 ↔ 2.36*
Back Pain	2.2	686	2.04 ↔ 2.36*
Psychiatric	2.2	686	2.04 ↔ 2.36*
Assault	1.9	592	1.75 ↔ 2.05
Stroke / CVA	1.7	530	1.56 ↔ 1.84*
Headache	1.1	343	0.98 ↔ 1.22
Diabetic problems	1.1	343	0.98 ↔ 1.22*

(* not significantly different from preceding case type) Year 2006 (N=31174)

Source (Tasmanian Computer Aided Dispatch System)

Appendix N

Dispatch types for Metropolitan Melbourne (Victoria)

Type of case dispatched	Frequency % (of total cases)		
	%	N	95% CI
Dr. Request	16.1	28127	15.93 ↔ 16.27
Cardiac	16	27952	15.83 ↔ 16.17*
Breathing Problems	12.6	22012	12.44 ↔ 12.76
Fall	8.7	15199	8.57 ↔ 8.83
Unconscious / Fainting	7.2	12578	7.08 ↔ 7.32
Traffic Accident	5.3	9259	5.19 ↔ 5.41
Condition Unknown	3.8	6639	3.71 ↔ 3.89
Convulsions / Fitting	3.7	6464	3.61 ↔ 3.79*
Haemorrhage	3.6	6289	3.51 ↔ 3.69*
Abdominal	3.5	6115	3.41 ↔ 3.59
Psychiatric	3.3	5765	3.22 ↔ 3.38
Traumatic injury	2.8	4892	2.72 ↔ 2.88
Overdose	2.6	4542	2.53 ↔ 2.67
Stroke	2.3	4018	2.23 ↔ 2.37
Assault	2.3	4018	2.23 ↔ 2.37*
Transfer	2.2	3843	2.13 ↔ 2.27*
Back Pain	1.5	2620	1.44 ↔ 1.56
Diabetic problems	1.3	2271	1.25 ↔ 1.35

(* not significantly different from preceding case type) 1st Nov 2005 - 31st Dec 2006 (N=174702)

Source (Victorian Ambulance Service – formerly Metropolitan Ambulance Service VACIS)

Appendix O

Transfer types for the rural paramedic ('RESP' and 'Sufficing' models) in Tasmania

Type of Transfer	Frequency % (of sample)		
	%	N	95% CI
Abdominal	19.1	38	13.64 ↔ 24.56
Trauma (includes fractures, road traffic accidents, burns)	18.59	37	13.18 ↔ 24.00
Cardiac	13.57	27	8.81 ↔ 18.33
Infection	7.04	14	3.49 ↔ 10.59
Psychiatric (includes medication overdoses)	6.53	13	3.10 ↔ 9.96
Respiratory	6.53	13	3.10 ↔ 9.96
Maternity	6.03	12	2.72 ↔ 9.34
Stroke	4.02	8	1.29 ↔ 6.75
Back Pain	3.02	6	0.64 ↔ 5.40
Renal	2.01	4	0.06 ↔ 3.96
Post Treatment	2.01	4	0.06 ↔ 3.96
Palliative	2.01	4	0.06 ↔ 3.96
Seizures	1.51	3	-0.18 ↔ 2.40
Anemia	1.51	3	-0.18 ↔ 2.40
Transport Doctor	1.51	3	-0.18 ↔ 2.40
Headache	1.01	2	-0.38 ↔ 2.40
Aircraft Retrieval	1.01	2	-0.38 ↔ 2.40
Altered Consciousness	1.01	2	-0.38 ↔ 2.40
Dehydration	0.5	1	-0.48 ↔ 1.48
Haemorrhage	0.5	1	-0.48 ↔ 1.48

(N=523, Sample size 199, random sample with 92% confidence 5% error) Year 2005

Source (Tasmanian Computer Aided Dispatch System)

Appendix P

Subject Guide: Monash University Bachelor of Emergency Health (Paramedic)

First Year

First semester

- BEH1011 Clinical concepts of paramedic practice
- HSC1031 Foundations of health
- HSC1051 Working with people
- HSC1301 Human structure and function 1

Second semester

- HSC1052 Health and social care systems
- HSC1302 Human structure and function 2
- NUR1202 Legal issues and concepts
- SRH2002 Indigenous health and wellbeing

Second year

First semester

- BEH2011 Professionalism and community based emergency health systems
- BEH2021 Population aspects of CBEH services
- BEH2501 Community health, culture and society
- BEH2041 Human development and health across the lifespan

Second semester

- BEH2012 Paramedic management of cardio-respiratory conditions
- BEH2022 Paramedic management of trauma and environmental conditions

Summer A semester

- BEH2032 Paramedic clinical practice 1

Third year

First semester

- BEH3011 Paramedic management of medical conditions and mental health
- BEH3021 Paramedic management of health conditions at life stages
- BEH3031 Paramedic clinical practice 2
- BEH3051 Paramedic management of mental health

Second semester

- BEH3012 Clinical leadership and emergency preparedness
- BEH3022 Research and contemporary challenges in CBEH
- BEH3032 Paramedic management of critical care specialty situations
- BEH3042 Advanced paramedic clinical practice 3

Source: (Monash University 2009e[accessed 1st August 2009], available online at http://monash.edu.au/pubs/handbooks/courses/3445.html.)

Appendix Q

Course Objectives: University of Tasmania Associate Degree in Paramedic Studies

Introduction

This is a professionally recognised course studied over three years part-time with concurrent full-time employment in the ambulance service.

Objectives

Educational

By the completion of this course, the graduate will be able to:

1 . demonstrate the necessary attitudes and skills to meet the needs of the community, the industry and the profession as an Ambulance Paramedic and member of the health care team;
2 . recognise and assess appropriate symptom-syndrome patterns in patients with sudden illness or injury;
3 . demonstrate a patient orientated, preventive and systematic clinical approach to patient care that incorporates clinical problem solving processes in clinical decision making and the integration of theory, practical skills and clinical competence at the level of beginner Ambulance Paramedic;
4 . provide appropriate patient care during the transport of patients of all ages suffering from illness, injury or disability, whether physical or mental, acute or chronic;
5 . communicate and work effectively with other emergency services personnel and other members of the health care team;
6 . demonstrate insight into sociological, behavioural, ethnic, cultural, and disability issues and manage the associated social, cultural, religious, emotional and communication aspects of sick and injured persons, their relatives, carers and bystanders, and the "care of self" as an emergency services worker; and
7 . demonstrate the attributes of life-long learning by continuing to develop and further enhance their personal and professional development as an Ambulance Paramedic.

Vocational

By the completion of this course, the graduate will be able to:

1 . apply relevant principles of law, clinical protocols and administrative procedures to the care of patients within the operation of an Ambulance Service;
2 . practice as an Ambulance Paramedic within an appropriate ethical and professional construct;
3 . provide basic instruction to individuals and small groups;
4 . drive an ambulance vehicle safely and with comfort for the patient under all road conditions, within the legislation , existing regulations and Ambulance Service policies, and to maintain an ambulance vehicle and its equipment in optimal working order;
5 . initiate and/or assist with rescue techniques as appropriate to the Ambulance Paramedic and to initially manage multi-casualty incidents;
6 . contribute to Ambulance Services' quality management and clinical audit strategies, information technology and research programs and practice within an evidence-based paradigm.

Career Outcomes

Graduates will be qualified practicing paramedical professionals prepared to take leadership roles in emergency pre-hospital care situations and contribute to the expansion of practice knowledge.

Source: (Univerity of Tasmania 2009[accessed 1st Aug 2009], available online at http://courses.utas.edu.au/portal/page?_pageid=53,32959&_dad=portal&_schema=PORTAL&P_COURSE_CODE=M2C&P_YEAR=2009)

Appendix R

Subject Guide: Monash University Graduate Diploma of Emergency Health (MICA Paramedic)

Unit Code	Unit Name	Credit Point Value	Semester
PAR4301	Theoretical Foundation of MICA Paramedic Practice	6	1 and 2
PAR4302	MICA Paramedic Management of Emergency Cardiac Conditions	6	1 and 2
PAR4303	Paramedic Management of Emergency Trauma and Environment	6	1 and 2
PAR4304	MICA Paramedic Management of Emergency Medical Conditions	6	1 and 2
PAR4305	MICA Paramedic Management of Paediatric & Obstetric Patient	6	1 and 2
PAR4306	MICA Paramedic in an integrated Emergency Medical System	6	1 and 2
PAR4307	MICA Paramedic Clinical Practicum	12	1 and 2

Source: (Monash University 2008a[accessed 12th Feb 2008], available online at http://www.med.monash.edu.au/pgrad/coursework/3435.html)

Appendix S

Clinical placement hours by university

University	Degree	Pre or post employment model	Hours in clinical placements
Edith Cowan University	**BSc**	**Post**	**4160**
Queensland University of Technology	**BHSc**	**Pre**	**1200 (plus three weeks hospital placements)**
Charles Sturt University	**BCIPr**	**Pre**	**720**
Victoria University	**BHSc**	**Pre**	**184**
Monash University	**BEmH**	**Pre**	**440**
Flinders University	**BHSc-P**	**Pre**	**500**
University of Tasmania	**Ass Degree**	**Post**	**6240**

Source: (O'Meara, Brightwell et al. 20th Feb 2007, Submission to the HESA review. Paramedic education within Australian Universities)

Appendix T

Publication

Mulholland, P., C. Stirling, et al. (2009), "Roles of the rural paramedic - much more than clinical expertise." National Rural Health Alliance, [accessed 1st August 2009], available online at http://10thnrhc.ruralhealth.org.au/papers/docs/Mulholland_Peter_B4.pdf.

Roles of the rural paramedic – much more than clinical expertise

Peter Mulholland, Christine Stirling, Judith Walker

Abstract

Background

Paramedic education and training has a focus on the type of work performed. Some recent findings regarding the work of the rural paramedic indicate an expanded scope of practice with a strong community focus and involvement in primary health care. Because of this, proposals now appear for specific rural education and training. Whilst a picture is developing of the work of the rural paramedic, there is little knowledge about the differences between rural and urban paramedic practice. Revealing these differences will offer insight into specific roles for the rural paramedic and enhance any rurally oriented education and training for paramedics.

Objectives

To determine differences between rural and urban paramedic practice and the roles of the intensive care paramedic working in rural Australia.

Methods

A case study approach uses multiple sources of data including semi-structured interviews with intensive care paramedics across two states in Australia, review of relevant documentation and literature, case dispatch data, and observation. Interviews focus on specific work carried out, current education and training, and pathways for the future.

Findings

Rural paramedic practice is different from urban paramedic practice in that the rural paramedic: 1) adopts a whole of community approach rather than a case dispatch approach; 2) is a multidisciplinary team member rather than operating mainly within ambulance teams; 3) has extra responsibility as a teacher and manager for volunteers; and 4) is a highly visible and respected member of the community rather than relatively anonymous. With these differences, the rural paramedic displays various roles. For a whole of community approach, we see the role of community involvement, with the paramedic involved in project management or use of local media. A multidisciplinary approach means that the paramedic requires a multidisciplinary awareness in order to work well with other team members. Similarly, volunteer management requires an awareness of volunteers, of how to manage and teach volunteer groups. Finally, being a highly visible and respected community member means roles must display professionalism and accountability.

Implications for the future

Initial implications will be that those interested in undertaking rural placements in pre-hospital care will have a greater understanding of the demands of a rural environment. With longer-term development, knowledge of rural paramedic roles will enhance specific rural education and training for paramedics. Initiatives such as rural clinical placement for paramedic undergraduates, or courses with a multidisciplinary focus, will benefit not only the paramedics but also the health needs of rural communities in which they practice.

Introduction

The image of an ambulance rushing to attend an emergency case with lights and sirens is familiar to us all, and in itself offers definition to the role of a paramedic, traditionally this role is for attending the acutely ill or injured person. However, we now find that new roles for the paramedic are emerging. The rural paramedic in particular is experiencing an expanded scope of practice with strong community focus and involvement in primary health care [1, 2].

Recently, one new model for a rural expanded scope of practice emerged from research commissioned by the Australian Council of Ambulance Authorities (CAA). In this model, the paramedic's job description specifies rural community engagement, emergency care, scope of practice extension, and primary health care (RESP). The RESP paramedic will work with ambulance volunteers but is not necessarily part of a primary response crew with these volunteers. It is a move from the more traditional 'sufficing' model of paramedic practice in which provision of a minimal acceptable level of service occurs in response to community and political pressures [3]. The rural paramedic working within a sufficing model will often work with volunteers as a primary response crew.

With a RESP model, the job focus has widened from that of emergency care alone to a more community-based approach to health care in which the rural paramedic works closely with professionals from other health disciplines. This model of rural ambulance practice reflects community based and multidisciplinary components of several paramedic practitioner models operating within the United Kingdom (UK) and United States of America (USA) [4-11].

The Australian RESP model of rural paramedic practice, along with these other examples of expanded scope of practice from the UK and USA have formed an information base for the development of a specific postgraduate qualification in Australia for remote paramedical practice at James Cook University [12-14]. The development of such courses is a positive step toward the future of rural paramedic practice within Australia, however a gap remains in the determination of whether rural paramedic practice is any different to urban paramedic practice. The RESP study for example was examining paramedic practice from a rural perspective. How do we know if the role of the urban paramedic is not similar? Do we really need specific rural based education?

Current literature offers limited information. Some compares rural paramedic practice and urban practice on terms of practical skills such as intubation, and the ability of rural paramedics to perform to the same clinical skill level as their

urban colleagues [15-17]. Rural paramedics' inexperience with certain types of patients such as paediatrics is also discussed in the literature [18, 19]. Other studies revealed differences in the aspect of trauma, noting longer transport times, and more trauma cases in rural areas [20-22]. The focus is on differences in practical skills or different types of case attended. There is little knowledge of the rural and urban differences in interaction of the paramedic with the community, or other health workers with whom they work. As such, we know little of the roles and skills that may be unique to the rural paramedic.

This present paper approaches the issue of difference from the standpoint of the paramedic, by asking the question 'how do differences in paramedic tasks offer insight into rural paramedic roles and inform paramedic education and training?'

Methodology

A qualitative approach and a comparative case study strategy were used to undertake this study of rural and urban differences and paramedic roles. Multiple sources of data were collected: semi-structured interviews with intensive care paramedics across two states in Australia; review of documentation, including job descriptions, ambulance service and union websites, archival information, local media, and universities; case dispatch data; and observation of paramedics within their local environment, key processes and events. Data collection took place during 2006-2007.

The case study design followed the format as suggested by Yin [23] whereby cases are constructed with units for analysis, in this case paramedic localities, which are then compared and contrasted within and across cases. For example, one particular rural case consisted of two units for analysis, which were independent rural localities. Analysis of each locality considered multiple sources of data, and formation of a robust case took place by comparing each unit of analysis for similarities or contrasts in data. Purposeful selection of units of analysis is an integral part of the format, however there is no control over the events examined.

A total of five rural and two urban localities contributed toward two rural and one urban case from the states of Tasmania and Victoria. For the urban case, the guidelines were that the paramedic localities must be comparable in terms of accessibility to medical services, population, and paramedic crewing. Two cities of comparable size in Tasmania and Victoria were selected. Using the Accessibility / Remoteness Index for Australia (ARIA) both cities also had an ARIA classification of Highly Accessible (HA) to a wide range of services and social interactions[24].

The guidelines for the two rural cases were that the cases fit one of two identified models of rural paramedic within Australia. These were; 1) the sufficing model whereby ambulance locations were formed initially in response to community and political pressures[3] (S model), and 2) the recently proposed RESP model of rural community engagement, emergency care, scope of practice extension, and primary health care [1]. Three rural sites were classified as Moderately Accessible (MA) under ARIA classifications meaning there was significant restricted accessibility of goods and services and opportunities for social interaction[24]. Two rural sites were classified as Remote (R) under Aria classifications, meaning very restricted accessibility of goods and services and opportunities for social interaction[24]. Two localities were selected for the sufficing model, and three for the RESP model. By creating two rural cases, any differences in rural paramedic practice between the two models could be determined.

In order to maintain consistency interviews were with those paramedics at the qualification level of intensive care paramedic. Interview questions aimed to elicit what type of work the paramedics performed, any interactions with community members and other health professionals, and thoughts on their own education and training. Distribution of information statements regarding the project occurred after gaining permission from ambulance services. Intensive care paramedics contacted the researcher directly to express interest in participation. Ten paramedics expressed an initial interest; this included three from the RESP group, four from the paramedic / volunteer group, and three urban paramedics. A second round of information statements to urban areas gained a further two urban paramedics. One rural and one urban paramedic withdrew prior to interviews. Interviews were taped and transcribed by the principal author.

Documents gathered included case dispatch data, job descriptions, union and ambulance service memoranda, and local media reports relevant to each unit of analysis. University educational curricula, and ambulance service educational curricula, revealed types of subjects delivered. Conduct of interviews was in local environments, allowing for observation of the paramedic workplace in terms of local environment and services. Conduct of two interviews was by phone, and here paramedics described the environment in which they worked. At the time of rural data gathering, only dispatch data in Tasmanian rural areas was available in electronic format to allow for individual determination of case type. Cross reference between various forms of data enabled a process of triangulation, this served to guard against any bias from individual interviews [23, 25, 26].

Inductive analysis of data occurred with the aid of NVivo7 statistical software package, which allowed for comparison across each rural and urban case and the identification of consistent themes. Ethics approval was obtained through

the University of Tasmania Human Research Ethics Committee (Tasmania) Network with assurance of confidentiality.

Results

This study was a comparison of rural and urban paramedic practice and although similarities present, four main differences between rural and urban paramedic emerged from the data. These were that the rural paramedic: 1) adopts a whole of community approach rather than a case dispatch approach; 2) is a multidisciplinary team member rather than operating mainly within ambulance teams; 3) has extra responsibility as a teacher and manager for volunteers; and 4) is a highly visible and respected member of the community rather than relatively anonymous.

A similar case dispatch

Similarities exist between the cases dispatched to paramedics in rural areas and in urban areas. The most common types of cases dispatched in rural areas of this study (Figure 1) represent 81.6% of all cases dispatched and in urban areas (Figure 2 & 3) 79.4% and 96.5% respectively. Paramedics in both regions need to be prepared to attend cases such as breathing problems, cardiac problems (including cardiac arrest), falls, abdominal conditions, unconscious or fainting patients, and road accidents.

The main difference in case dispatch data, apart from actual case numbers, is the large proportion of ‘transfers’ in rural areas, this is because of the need to move patients from smaller rural health facilities to more appropriate urban medical care. The terminology of ‘transfer’ does not necessarily mean diminished paramedic responsibility, as similar cases again appear (Figure 4).

Figure 1: Dispatch types for the Rural Paramedic in Tasmania 2006 (N=1588)
Source (Tasmanian Computer Aided Dispatch System)

Type of case dispatched	Frequency % (of total cases)		
	%	N	95% CI
Transfer	35.9	570	33.53 ↔ 38.25
Condition Unknown	8.6	137	7.25 ↔ 10.01
Cardiac	7.1	113	5.86 ↔ 8.38
Breathing Problems	6.4	101	5.16 ↔ 7.56
Falls	6.2	99	5.04 ↔ 7.42
Abdominal	3.8	60	2.84 ↔ 4.72
Traffic Accident	3.5	55	2.56 ↔ 4.36
Unconscious / Fainting	3.4	54	2.51 ↔ 4.29
Convulsion / Fitting	1.5	24	0.91 ↔ 2.11
Stroke / CVA	1.5	24	0.91 ↔ 2.11
Assault	1.3	21	0.76 ↔ 1.88
Overdose	1.3	21	0.76 ↔ 1.88
Fire Incident	1.1	18	0.61 ↔1.65

Figure 2: Dispatch types for the Urban Paramedic in Tasmania 2006 (N=31174)
Source (Tasmanian Computer Aided Dispatch System)

Type of case dispatched	Frequency % (of total cases)		
	%	N	95% CI
Cardiac	12.1	3772	11.74 ↔ 12.46
Breathing Problems	8.9	2774	8.58 ↔ 9.22
Fall	8.7	2712	8.39 ↔ 9.01
Transfer	7.5	2338	7.21 ↔ 7.79
Abdominal	6.1	1901	5.83 ↔ 6.37
Condition Unknown	5.7	1777	5.44 ↔ 5.96
Unconscious / Fainting	4.8	1496	4.56 ↔ 5.04
Operational Coverage (contract event)	4.4	1371	4.17 ↔ 4.63
Traffic Accident	3.7	1153	3.49 ↔ 3.91
Convulsions / Fitting	2.8	873	2.62 ↔ 2.98
Overdose	2.3	717	2.13 ↔ 2.47
Haemorrhage	2.2	686	2.04 ↔ 2.36
Back Pain	2.2	686	2.04 ↔ 2.36
Psychiatric	2.2	686	2.04 ↔ 2.36
Assault	1.9	592	1.75 ↔ 2.05
Stroke / CVA	1.7	530	1.56 ↔ 1.84
Headache	1.1	343	0.98 ↔ 1.22
Diabetic problems	1.1	343	0.98 ↔ 1.22

Figure 3: Dispatch types for the Urban Paramedic (Victoria) 1st Nov 2005 - 31st Dec 2006 (N=174702)
Source (Victorian Ambulance Service – formerly Metropolitan Ambulance Service VACIS system)

Type of case dispatched	Frequency % (of total cases)		
	%	N	95% CI
Dr. Request (type not specified)	16.1	28127	15.93 ↔ 16.27
Cardiac	16	27952	15.83 ↔ 16.17
Breathing Problems	12.6	22012	12.44 ↔ 12.76
Fall	8.7	15199	8.57 ↔ 8.83
Unconscious / Fainting	7.2	12578	7.08 ↔ 7.32
Traffic Accident	5.3	9259	5.19 ↔ 5.41
Condition Unknown	3.8	6639	3.71 ↔ 3.89
Convulsions / Fitting	3.7	6464	3.61 ↔ 3.79
Haemorrhage	3.6	6289	3.51 ↔ 3.69
Abdominal	3.5	6115	3.41 ↔ 3.59
Psychiatric	3.3	5765	3.22 ↔ 3.38
Traumatic injury	2.8	4892	2.72 ↔ 2.88
Overdose	2.6	4542	2.53 ↔ 2.67
Stroke	2.3	4018	2.23 ↔ 2.37
Assault	2.3	4018	2.23 ↔ 2.37
Transfer	2.2	3843	2.13 ↔ 2.27
Back Pain	1.5	2620	1.44 ↔ 1.56
Diabetic problems	1.3	2271	1.25 ↔ 1.35

Figure 4: Transfer types for the Rural paramedic (RESP and S models) in Tasmania 2005 (N=523, Sample size 199, random sample 92% confidence 5% error)

Source (Tasmanian Computer Aided Dispatch System)

Type of Transfer	Frequency % (of sample)		
	%	N	95% CI
Abdominal	19.1	38	13.64 ↔ 24.56
Trauma (includes fractures, road traffic accidents, burns)	18.59	37	13.18 ↔ 24.00
Cardiac	13.57	27	8.81 ↔ 18.33
Infection	7.04	14	3.49 ↔ 10.59
Psychiatric (includes medication overdoses)	6.53	13	3.10 ↔ 9.96
Respiratory	6.53	13	3.10 ↔ 9.96
Maternity	6.03	12	2.72 ↔ 9.34
Stroke	4.02	8	1.29 ↔ 6.75
Back Pain	3.02	6	0.64 ↔ 5.40
Renal	2.01	4	0.06 ↔ 3.96
Post Treatment	2.01	4	0.06 ↔ 3.96
Palliative	2.01	4	0.06 ↔ 3.96
Seizures	1.51	3	-0.18 ↔ 2.40
Anemia	1.51	3	-0.18 ↔ 2.40
Transport Doctor	1.51	3	-0.18 ↔ 2.40
Headache	1.01	2	-0.38 ↔ 2.40
Aircraft Retrieval (critical patient)	1.01	2	-0.38 ↔ 2.40
Altered Consciousness	1.01	2	-0.38 ↔ 2.40
Dehydration	0.5	1	-0.48 ↔ 1.48
Haemorrhage	0.5	1	-0.48 ↔ 1.48

A whole of community approach

We became involved in a lot of community things like……up at the hospital we became involved in pre-natal classes, being involved in drugs in rural areas, and being involved in some of the committees there…first aid, we run first aid classes, not under the guise of the ambulance service but to assist. (Rural Paramedic, S model)

Rather than developing as a response to management of emergency cases alone, the rural paramedic becomes involved as an integral part of the community. The work done by rural paramedics includes public education, school visits, and general first aid/emergency care education. The approaches adopted by the paramedic are innovative in that the paramedic will make use of public media such as radio or newsprint to convey a message and promote a public health message to community groups.

This primary health care role extends to include community health centers, drug rehabilitation classes, aged and rural health care groups, to other emergency service groups such as fire and State Emergency Service (SES). This is evident with the involvement of one RESP paramedic who has been instrumental in the establishment of a community health centre in an area previously lacking in allied health support such as regular physiotherapy, occupational therapy or even drug and alcohol education.

The rural paramedic role in the community is proactive and witnesses paramedics planning for future health needs. Another example from a RESP paramedic is the proposed development of a casualty treatment area in a region with no local public hospital or emergency department. Other paramedics will be members of local hospital committees.

A multidisciplinary team member

I'm on the community health council, where a number of different health workers get together once a month and look at what sort of projects we have got going in the town, how we can support that sort of stuff. So that's like your health promotions officer, your physiotherapist, your occupational therapist, district nurses, remote area nurses, myself……You do hospital, nursing, home care people, and we look at individual cases for project work. (Rural paramedic, RESP model)

Whereas both urban and rural paramedics will extend pre-hospital care to work together with hospital accident and emergency staff when required, the rural paramedics exhibit a more comprehensive multidisciplinary approach. In all

cases, rural paramedics are involved as members of some form of community health organization outside of the ambulance service. This willingness to practice outside of the 'silo' of emergency care is evident with paramedics placing themselves on local community health councils alongside physiotherapists, occupational therapists and district nurses, as well as being involved in community health promotions and educational initiatives ranging from pre-natal classes to drug and alcohol education.

With this multidisciplinary approach the rural paramedic, attending community members in their own homes is able to offer a unique contribution to the overall health care management of individuals. Advising other agencies of the specific needs of patients is commonplace and often an informal process. One example of such is where a community member requires counseling or psychological support rather than medical attention.

Some of the patients that aren't coping, because it is a reasonably small community what we normally tended to do, we could talk to the doctor, and also we could arrange counselors, there was a local community type house with paid counselors, and we could put these people in contact with them. (Rural paramedic, RESP model)

In the hospital environment, all rural paramedics report working together with nursing staff, allied health staff, and doctors to provide a continuation of care from the pre-hospital to the hospital environment. Because medical practitioners are often on call, this care will extend to working with nursing staff whilst waiting for the doctor. Multidisciplinary practice is further extended when the rural paramedics assist in the hospital with critical life saving measures such as intubation, or drug therapy.

In another tangent to a multidisciplinary approach, education of other health professionals is a common element for all rural paramedics interviewed. The paramedics in the hospital or health centre setting will conduct sessions ranging from basic first aid training to education on advanced clinical practices for other health professionals.

A manager of volunteers

O*ngoing training is still up to the branch people[rural paramedic]…I've found that over the years the quality of the training the volunteers receive is still dependant on the branch station officers [rural paramedics]… initial training and on going training. (Rural paramedic, S model)*

Part of the formal role of the rural paramedic in both models is the management and training of local volunteer units [27, 28] and the paramedics regard the training of volunteer units as an important priority. By ensuring a

well-trained and capable volunteer workforce, the rural paramedic is also ensuring the volunteer units support the high level of pre-hospital care provided in a rural area.

Paramedics adopt more than didactic classroom training for volunteers with development of novel approaches in their training methods.

Also project work about taking my ACOs[Volunteers] to large events in and around Melbourne so that, where there are field hospitals set up so there's another medical company, so I can pair them up with staff from another medical company so they can get the experience of doing patient assessments and watching trends in patient care and patient assessment under supervision of other staff. I've got some pretty keen ACOs[Volunteers] who have been away and done those sort of things. (Rural paramedic, RESP model)

The relationship of the rural paramedic with a volunteer group is more than a training role, and better fits the concept of volunteer management with rural paramedics involved in review of case management by volunteers, peer support, volunteer recruitment, occupational health and safety, and determining shift rosters. The rural paramedic needs to be able to consider and manage the mix of people that are willing to contribute their own time as ambulance volunteers.

…..manage some of the more quirky personalities you can find in rural communities… they (volunteers) can be very difficult people to work with, they presented with problems over the course of the year.(Rural paramedic, S model)

A highly visible community member

You put yourself in a car with paramedic on it; you cannot go anywhere nor do anything. Then on your days off you are still driving the service car, they know where you are all the time. (Rural paramedic, RESP model)

One aspect of the urban paramedic role is that once a shift is finished the paramedic is able to maintain a degree of anonymity. On the other hand, the whole of community approach adopted by the rural paramedic means that a large proportion of community members are aware of whom the paramedic is. This is especially so considering that only one or two rural paramedics served the rural communities in this study. In addition, a common characteristic among rural paramedics is that they will inevitably be using an ambulance

vehicle during non-rostered hours for the purpose of on call arrangements or as part of an employment package. The use of this vehicle means that the rural paramedic is at all times highly visible within the community.

Even when not using an ambulance vehicle rural paramedics find that the only way to escape the role totally is to depart the town itself. This is difficult to achieve when permanent officers will usually be living in the communities they serve. The rural paramedic with a family can find this particularly difficult, as the family also becomes a highly visible unit within a rural community.

High visibility can also transfer to high demand, and all rural paramedics report having to put in a proportion of work outside of normal roster hours. This includes training of volunteers, but is also demonstrated by patients sometimes reporting to the paramedic's home rather than presenting to hospital.

This willingness to present directly to the paramedic suggests the respect community members have for the skills of the rural paramedic. This is a feature further supported by other health workers, where the paramedic is often called to assist in critical care at the hospital itself.

All critical patients who are being flown out they call the paramedic out to assist with packaging the patient, and sometimes the patient is delivered there in the rawest state so they need the whole box and dice, intubation etc, prior to the aircraft retrieval ream coming in (Rural Paramedic, RESP model).

Discussion

This study is a comparison of rural and urban paramedic practice and although similarities in case dispatch are present, four main differences between rural and urban paramedics emerge from the data. These are that the rural paramedic: 1) adopts a whole of community approach rather than a case dispatch approach; 2) is a multidisciplinary team member rather than operating mainly within ambulance teams; 3) has extra responsibility as a teacher and manager for volunteers; and 4) is a highly visible and respected member of the community rather than relatively anonymous.

These results have a high level of consistency with previous studies showing that the rural paramedic in Australia is involved in rural community engagement, emergency care, a scope of practice extension, primary health care, and has a strong involvement with ambulance volunteers [1, 2, 29-34]. Indeed, given the consistency of results across both the rural models used in this study it would suggest that these particular aspects to the role of rural paramedics are more widespread than one model of rural practice alone.

The differences found in this study point to the rural paramedic being a practitioner in his/her own right, and lend weight to the development of rural specific courses such as the Certificate in Remote Paramedical Practice through James Cook University in Australia[12-14]. Each difference has a link to certain paramedic roles. For a whole of community approach, the role is one of community involvement, with the paramedic involved in project management or use of local media. A multidisciplinary approach means that the paramedic requires a multidisciplinary awareness in order to work well with other team members, and to be able to move between the pre-hospital and hospital environments. Similarly, volunteer management requires an awareness of volunteers, of how to manage and teach volunteer groups. Finally, being a highly visible and respected community member means rural paramedics must demonstrate high levels of professionalism and accountability for their actions and interactions.

There is evidence that the promotion and fostering of these rural paramedic roles is already taking place to some extent in the current Certificate in Remote Paramedical Practice offered at James Cook University in Australia. The roles of community involvement and multidisciplinary awareness are incorporated in this particular postgraduate course to see paramedics working within their rural communities in the development of collaborative strategies designed to meet community health needs[14].

Further development of educational initiatives such as rural clinical placements or multidisciplinary programs for paramedics will create awareness and development of identified roles. Rural clinical placement for undergraduates in other disciplines has seen success in regard to a desire to undertake a rural career [35-41], and will provide the undergraduate paramedic student an opportunity to experience first hand the differences between rural and urban paramedic practice, whilst building awareness of their own 'fit' within a rural community. Multidisciplinary education programs will promote a multidisciplinary awareness. Such programs have been successful with various health care professions [42-45] and are now appearing with medical students, nurses, and paramedics [12, 14, 46-48].

The future is promising for development of such initiatives, with Australian ambulance organizations recognizing a need for further development of the paramedical services offered in rural communities. The New South Wales (NSW) Ambulance Rural Plan (2006) states the need for health related research and development with identification of geographical packages for rural areas [49], and a report from 2008 into the management and operations of the NSW ambulance service recognizes the importance of intensive care paramedic training in rural areas[50]. The NSW Ambulance Service has also been instrumental in establishing community based extended care paramedic programs in both urban and rural areas [51]. From Queensland comes a comprehensive worldwide examination of several models of extended

paramedical health care which has been constructive in the informing of the James Cook Certificate in Remote Paramedic Practice [13, 52], and the recent RESP model of practice was the outcome of a study commissioned by the Australian Council of Ambulance Authorities[1]. Recognizing differences between rural paramedic and urban paramedic practice and expanding the focus to include roles of the rural paramedic, will enhance such developments and build upon the evidence base required for new educational initiatives.

This current study has examined rural and urban paramedic practice across two states in Australia. Further investigation using other states will contribute to an understanding of rural and urban paramedic differences, and the role of the rural paramedic. Paramedic practice in very remote areas is not part of this study, and should be a focus for further investigation.

Conclusion

Whilst the image of an ambulance rushing to attend an emergency case with lights and sirens is familiar, there is more to the role of the paramedic. In particular, this study reveals differences between the rural and urban paramedic that help explain why we need an expanded role for paramedics that acknowledges practice beyond that of attending the acutely ill or injured person.

Rural paramedic practice is different from urban paramedic practice in that the rural paramedic is a highly involved and visible member of the community, working closely with other health professionals, and ambulance volunteers. With these differences, the rural paramedic displays various roles relating to community involvement, multidisciplinary awareness, an awareness of volunteers, and incorporating professionalism and accountability.

Community based and multidisciplinary components are present in models of expanded paramedic practice in the United Kingdom and United States of America. Australian ambulance organizations and educational institutions are combining knowledge gained from these models of practice with locally based research, and in one particular example, roles of multidisciplinary awareness and community involvement are part of a specific rural postgraduate paramedic qualification and have seen promotion of collaborative strategies for health care in rural communities. Continued focus on advanced roles of the rural paramedic will see acknowledgement of these rural roles and the development of further training. Initiatives such as rural clinical placement for paramedic undergraduates, or courses with a multidisciplinary focus, will benefit not only the paramedics but also the health needs of rural communities in which they practice.

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